DOCUMENT RESUME

ED 237 813 CE 800 067

AUTHOR Kendall, Elizabeth L.; Chenoweth, Roberta
TITLE Do You Read Me? Industrial Supplement: Reading Development Activities Guide.
INSTITUTION West Virginia State Vocational Curriculum Lab., Cedar Lakes.
SPONS AGENCY West Virginia State Dept. of Education, Charleston. Bureau of Vocational, Technical, and Adult Education.
PUB DATE 81
NOTE 92p.; For related documents, see ED 210 454 and CE 800 066-069.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Content Area Reading; Fine Arts; *Industrial Arts; Learning Activities; *Prevocational Education; Puzzles; Reading Comprehension; *Reading Games; *Reading Improvement; *Reading Skills; Secondary Education; *Trade and Industrial Education; Vocabulary Skills; *Vocational Education; Word Recognition
IDENTIFIERS PF Project

ABSTRACT

This activity guide is one of four supplements to be used with "Do You Read Me? Prevocational-Vocational Reading Development Activities" (ED 210 454). Each supplement deals with a different occupational category. Games, puzzles, and other activities are offered to aid in developing the word recognition, vocabulary, and comprehension skills of students in prevocational and vocational education. The subject of this supplement is industrial occupations. Activities are presented for auto body, auto mechanics, carpentry, drafting, electricity, machine shop, masonry, plumbing, refrigeration, sheet metal, small engines, and welding. A small section on fine arts occupations is also included. Answer keys for the activities are appended. (DC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED237813
CE 040 647

DO YOU READ ME ?

INDUSTRIAL SUPPLEMENT

PREVOCATIONAL - VOCATIONAL

READING DEVELOPMENT ACTIVITIES

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. Thomas

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Reproduced by permission of the publisher

WEST VIRGINIA BOARD OF EDUCATION

EXECUTIVE OFFICES

Charleston, West Virginia 25305

Mr. William M. Smith, President
Follansbee, 1982

Dr. Charles H. Wagoner, Vice President
Weston, 1984

Mr. Paul J. Morris, Secretary
Dunbar, 1980

Mr. James P. Clark, Member
St. Albans, 1986

Mr. Duke A. McDaniel, Member
Petersburg, 1987

Mrs. Mary Martha Merritt, Member
Beckley, 1983

Mr. Bob E. Myers, Member
Huntington, 1985

Dr. Carl J. Roncaglione, Member
Charleston, 1981

Mr. Richard N. Schnacke, Member
New Martinsville, 1988

EX OFFICIO MEMBER
Dr. Roy Truby
Superintendent
West Virginia Department of Education

EX OFFICIO MEMBER
Dr. Robert Ramsey
Chancellor
West Virginia Board of Regents

VOCATIONAL EDUCATION PROGRAMS ARE AVAILABLE WITHOUT REGARD TO RACE, COLOR, NATIONAL ORIGIN, SEX OR HANDICAP.

DO YOU READ ME?

INDUSTRIAL SUPPLEMENT

Reading Development Activities Guide

Developed
by

Elizabeth L. Kendall
Roberta Chenoweth
Marshall University
Huntington, West Virginia

This material was developed through the cooperation and funds of the Bureau of Vocational, Technical and Adult Education, West Virginia Department of Education.

1981

FORWARD

Through a grant provided by the West Virginia Bureau of Vocational, Technical, and Adult Education, the Prevocational Exploration staff at Marshall University has compiled four supplements to the reading development activities guide, Do You Read Me?

Supplements have been prepared for use in Business and Office, Environmental, Industrial, and Service Areas. These materials were developed, field tested, and revised by prevocational and vocational teachers throughout the state, with the purpose of improving reading skills.

INTRODUCTION

The activities contained in this booklet comprise the Industrial Supplement to Do You Read Me?. and should be used in conjunction with that reading development activities teacher's guide.

Subject areas covered in this supplement are as follows:

Fine Arts
Industrial
- Auto Body
- Auto Mechanics
- Carpentry
- Drafting
- Electricity
- Machine Shop
- Masonry
- Plumbing
- Refrigeration
- Sheet Metal
- Small Engines
- Welding

These activities are designed to assist prevocational and/or vocational teachers from the introduction ro review of various aspects in a basic industrial curriculum with the purpose of improving word recognition, vocabulary, and comprehension skills. The difficulty level of these activities varies; therefore, it is necessary for each teacher to evaluate and adapt the activities for use in these particular teaching environment.

ACKNOWLEDGEMENTS

The completion of the Industrial Supplement to the reading development activities guide, Do You Read Me?, depended upon the assistance, advice, and cooperation of many individuals and a grant by the Bureau of Vocational, Technical and Adult Education.

The specific contributions of the following individuals are acknowledged.

Joseph Delaney
Long Drain Elementary School
Wetzel County

Calvin Isaacs
Putnam County Vocational
Technical Center
Putnam County

Eugene King
Former Industrial Arts Teacher
Valley High School
Fayette County

Ron Norberg
Cameron High School
Marshall County

Lawrence Smith
Fayette Plateau Vocational
Technical Center
Fayette County

Glen Ward
United Career Center
Harrison County

Dr. John Lunstrum
Language Education Program
Florida State University
Tallahassee, Florida

Dr. Fred Harrington, Coordinator
Curriculum Development
Bureau of Vocational, Technical
and Adult Education
Charleston, West Virginia

Robert Martin
Coordinator, Career Education
Bureau of Vocational, Technical
and Adult Education

Elizabeth L. Kendall
Assistant Project Director
Marshall Universtiy
Huntington, West Virginia

Roberta Chenoweth
Research Associate
Marshall University
Huntington, West Virginia

Debbie Burk Kiser, Artist
Duntar, West Virginia

Debbie Basham, Typist
Marshall University
Huntington, West Virginia

TABLE OF CONTENTS

Forward i
Introduction ii
Acknowledgments iii

FINE ARTS
- Word Recognition
  - Fine Arts Occupations Word Search Puzzle I-1
- Vocabulary
  - Careers I-2

INDUSTRIAL
- GENERAL
  - Word Recognition
    - Flag Day I-3
    - Measurement Terms Word Search Puzzle I-4
    - Skill Cards I-5
  - Vocabulary
    - Charades I-6
    - Tools Match Game I-7
  - Comprehension
    - Match Game - Safety I-8
- AUTO BODY
  - Word Recognition
    - I Know It I-9
    - Word Search Puzzle I-10
  - Vocabulary
    - Word Tic-Tac-Toe I-11
- AUTO MECHANICS
  - Word Recognition
    - Word Relay I-12
  - Comprehension
    - Baseball I-13
- CARPENTRY
  - Word Recognition
    - Circular Saw Word Search Puzzle I-14
    - Go Around The Board I-15
    - Toenailing Word Search Puzzle I-16
    - Wordo I-17
    - Word Relay I-18
  - Vocabulary
    - Word Parcheesi I-19
    - Word Tic-Tac-Toe I-20
  - Comprehension
    - Baseball I-21
    - Hand Tool Identification I I-22
    - Hand Tool Identification II I-23

Hardware Identification I-24
Woodwork Identification I-25

DRAFTING
Word Recognition
Go Around The Board I-26
Word Tic-Tac-Toe I-27
Vocabulary
Word Parcheesi I-28

ELECTRICITY
Vocabulary
Word Tic-Tac-Toe I-29
Comprehension
Baseball I-30

MACHINE SHOP
Word Recognition
Machine Shop Word Search Puzzle I-31

MASONRY
Word Recognition
I Know It I-32
Word Search Puzzle . . . . . I 33
Vocabulary
Word Parcheesi I-34
Comprehension
Baseball I-35

PLUMBING
Comprehension
Naming The Plumbing Parts I-36

REFRIGERATION
Word Recognition
Wordo - Refrigeration I I-37
Wordo - Refrigeration II I-38
Word Search Puzzle - Refrigeration I-39

SHEET METAL
Word Recognition
Wordo I-40
Vocabulary
Bingo - Sheet Metal I-41
Crossword Puzzle - Metal Fabrication I-42
Naming Sheet Metal Joints and Bendings I-43
Comprehension
Metal Cutting Crossword Puzzle I-44

SMALL ENGINES
Word Recognition
I Know It I-45
Vocabulary
Machinery Go Around The Board I-46

Word Parcheesi - Small Engines I-47
Comprehension
Matching Words and Concepts I-48

WELDING
Word Recognition
Go Around The Board - Soldering I-49
Word Search Puzzle - Oxy-Acetylene Welding I-50
Vocabulary
Word Parcheesi I-51
Word Jumble Puzzle - Welding I-52
Comprehension
Cloze Inventory - Brazing I-53
Cloze Inventory - Soldering I-54

ACTIVITY KEYS IK-1

FINE ARTS OCCUPATIONS WORD SEARCH PUZZLE

OBJECTIVE: To provide practice in word recognition, vocabulary, and spelling reinforcement.

MATERIALS: A duplicated sheet with the word search puzzle for each student.

DIRECTIONS: Seventeen occupations pertaining to fine arts are recorded in the puzzle. Try to identify the occupations by drawing a circle around the entire word(s). Use the list below the puzzle to check your answers.

WORD SEARCH PUZZLE

A C H O R E O G R A P H S D E G H

C R A D F I K M Z R L F G A M P Q

T B T E A C H E R M D J K N U W D

O M C D J L N O P Y C H I C H I R

R U E V I U S N A B Z O N E Y R A

A S H G W R T O L M R S T R O J M

R I Y A S K E T C H E R M S L N A

T C Z B P N O C A R T O O N I S T

A I K Q X P Q R T F P Q A N E T I

P A I N T E R E V O X F D S T O C

P N J R W T S U G W R P B W Y R R

R C I V S W X C O M P O S E R Y E

A R R A N G E R U V G C Z F G T A

I D H Y Z V X D U L Q R U X H E D

S T S U K L C S T O P M V A C L E

E G F C H O I R M A S T E R Z L R

R E A F I J B R Y H L K O I C E Z

S S T A G E D I R E C T O R B R C

O R C H E S T R A T O R D E S S A

choreographs
actor
art director
dancers
composer
orchestrator
stage director
choirmaster
arranger
painter
sculptors
cartoonist
sketcher
art appraiser
musician
art teacher
story tellers

See Activity Key on page IK-1

CAREERO

OBJECTIVE: To provide practice in vocabulary skills.

MATERIALS: A duplicated sheet for each student. Squares of colored papers with careers typed on them.

DIRECTIONS: Print the following careers several times on square pieces of colored paper. Distribute the pieces of paper to participants. Let one student pronounce and spell the words on the square while players are matching colored squares with identical words on mimeographed sheets. A winner is recognized when positions are obtained as in regular bingo.

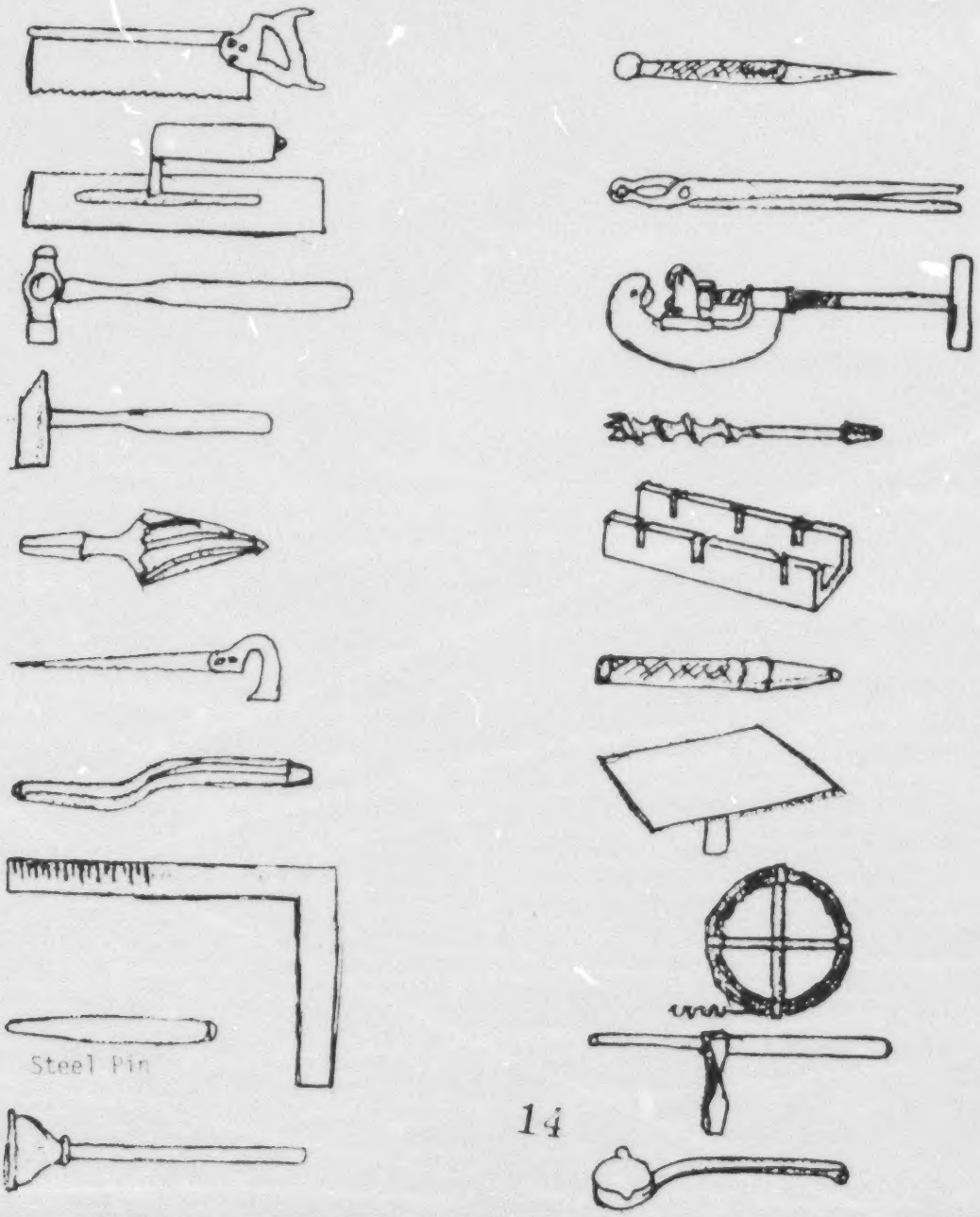
C	A	R	E	E	R	O
Art	Cartoonist	Painter	Art Director	Paint Restorer	Sculptor	Art Teacher
Pianist	Sketcher	Art Appraiser	Classical Opera	Rock Group	Opera Ballet	Saxophonist
Drama	Actor	Stage Director	Actress	Dramatic Coach	Story Teller	Drama Teacher
Dramatic Reader	Motion Picture Narrator	Jazz Combo	F R E E	Musical Comedies	Symphony Orchestras	Aerobatic
Music	Choirmaster	Musical Entertainer	Music Teacher	Orchestra Leader	Concert Singer	Musician
Popular Singer	Choral Director	Arrangers	Music Director	Composer	Orches-trator	Tap Dancer
Dance	Choreo-graphs	Dance Instructors	Dancers	Ballet	Ballroom	Chorus

FLAG DAY

OBJECTIVE: To match names of tools with the corresponding pictures.

MATERIALS: Pins with paper flags attached with names of tools.
Bulletin board and large pictures of various tools.

DIRECTIONS: Students must match name of tool with picture by sticking pin with correct name on or above picture. Flags should be placed face down so the student does not know which one s/he is choosing. Below are examples of tools to be put on bulletin board.



MEASUREMENT TERMS WORD SEARCH PUZZLE

OBJECTIVE: To provide practice in word recognition, vocabulary, and spelling reinforcement.

MATERIALS: A duplicated sheet with the word search puzzle for each student.

DIRECTIONS: The following puzzle can be used in several ways to teach the above skills. The words can be given orally, one-by-one, training the students to visualize the word and find it. The definitions might be given either orally or in writing to review vocabulary and spelling of the hidden words. In individual situations where particular students have few, if any, reading skills, the list of words might be given to help these students in word recognition.

Find and circle the following words in the puzzle below.

centimeters	weight	decimeter	deciliter
grams	capacity	decameter	yards
kilometers	liter	hectometer	inches
meter	millimeter	centiliter	feet

W A C R D B R X D T U V R

E T X E Y C B X C A B D E

I T R T Q L J K E F C H T

G S D E C A M E T E R A E

H A Y M O M U P P Z A T M

T M T O Z D N C O B O P I

G M I T R A C D T A G H L

H T C C B N Q K S R B P L

I U A E G S V I Z Q E X I

R L P H M R R L I T E R M

E K A W Y X A O E W U V C

T Q C E N T I M E T E R S

I E J I C Y Z E S X I E I

L R E T I L Y T R P W T W

I H D P C E N E O T X I K

T G F L P X T R B E S L Y

N F C D Q E F S G E H I X

E O N C M S A A H F Z C Y

C D E I R B D C Z Y G E Z

K N C B E G N R D X C D J

D E E T S I F H A X D I E

D K A U B E E W C Y D E T

See Activity Key on Page IK-1

SKILL CARDS

OBJECTIVE: To provide practice in word attack skills.

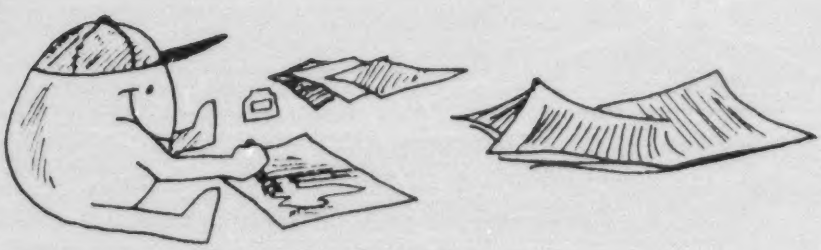
MATERIALS: Construction paper, newspapers, scissors, paste

DIRECTIONS: Take pieces of construction paper and print a word attack skill on each piece. Give each student one of these skill cards, some newspaper, scissors, and paste. Tell him/her to cut from the newspaper all the words s/he can find that fit the skill, then paste them on the card. Student cooperation is fine here. Each student should work on a different sound.

EXAMPLES:

aw as in saw	
walk	fought

i as in kite	
height	eye



REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

CHARADES

OBJECTIVE: To provide practice in vocabulary skills.

MATERIALS: Word cards with names of pre-selected tools or vocabulary, (hammer, saw, nails, plane, glue)

DIRECTIONS: The class is divided into several groups. A student selects one card and in front of the group must act out the word without speech. The turn rotates from team to team and at the end of a pre-determined time, the team with the highest number of points wins.

VARIATIONS: The class is divided into two teams. Team A selects a student. This student draws a card from a box and represents this term or piece of equipment. Each team alternately asks questions about the term or equipment. The student answers with yes, no, sometimes. The first team who gives the term or equipment receives one point. (The instructor then decides how the points will be used).

TOOLS MATCH GAME

OBJECTIVE: To provide practice in word recognition and definition.

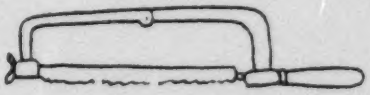
MATERIALS: A duplicated sheet for each student.

DIRECTIONS: Match the term in column 1 with the picture in column 2.

_____ 1. This tool is used to put in screws.

1

_____ 2. This tool is used by a bricklayer.



2

_____ 3. This tool is used to cut sheet metal.

3

_____ 4. This tool is used to cut round or square stock.

4

_____ 5. This tool is used to tighten a drill chuck.

5

See Activity Key on Page IK-2

MATCH GAME - SAFETY

OBJECTIVE: To provide practice in selection of safety equipment in an industrial setting.

MATERIALS: A duplicated sheet for each student.

DIRECTIONS: Match the term in column I with the definition in column 2.

1. Gloves	A. Necessary protection when lifting heavy objects.
2. "No Smoking"	B. Worn when working with sharp metal.
3. Guard	C. Sign found where shavings, chemicals, or other flying particles are a danger.
4. Safety glasses	D. Dangerous to you around moving parts.
5. Fire extinguisher	E. Worn in construction areas.
6. Hard hat	F. Dangerous to be worn when working with machinery.
7. Loose clothing	G. Protection against moving parts.
8. Ring	H. Required to be worn in shop areas.
9. "Eye Protection Required"	I. There are different kinds according to the class of fire.
10. Safety shoes	J. Sign found where it is a risk to life or health to disobey it.

REFERENCE: Smith, Earl and Webster, Jay, Safety Education Handbook and Instruction Guide, California State University, Long Beach.

See Activity Key on page IK-2

I KNOW IT

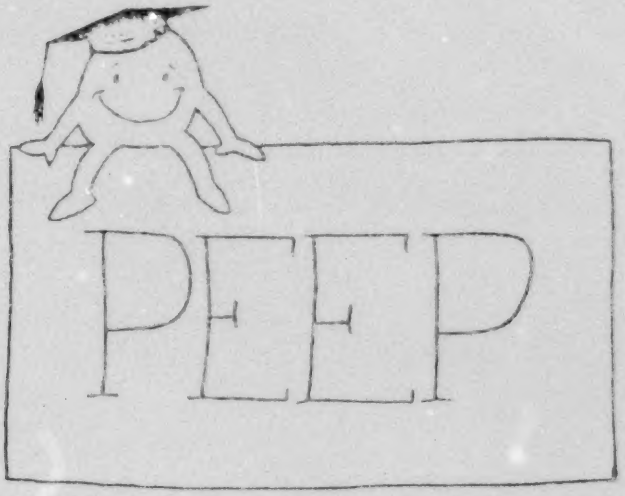
OBJECTIVE: To provide practice in word recognition and vocabulary skills.

MATERIALS: Index cards.

DIRECTIONS: Print words on a set of index cards. Place them in a pile, face down, before two students. As each student draws a card, s/he must read aloud the word printed on it. The person with the most cards wins. The meaning of the words can be part of the activity also.

SAMPLE WORDS:

atomize	chalking	peeling	epoxy
weathering	spoon	skirt	resin
adhesion	putty	shroud	coverage
urethane	metallic	dolly	fiberglass
bleeding	lacquer	chipping	cratering
tone	humidity	clear	flow
blistering	glass	retention	drier
solvent	nitrocellulose	compatibility	panel
cast	overlap	compressor	skin
body	overspray	enamel	damage
bloom	pigment	corrosion	estimate
solder			collision



REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

WORD SEARCH PUZZLE

OBJECTIVE: To provide practice in word recognition, vocabulary building, and spelling reinforcement.

MATERIALS: A duplicated sheet with the word search puzzle for each student.

DIRECTIONS: Find and circle the following words in the puzzle below.

air	color	gloss	sandblaster
auto	file	lead	sandpaper
booth	filler	rasp	thinner
catalyst			weld

G L O S S C Z O M L N S Q

V X Q A Y E C B F L E A D

S R T U P Z A A D K J N J

U W I T T Q I R W E L D M

O P C O L O R M I L N B S

E O A K T N I D J L O L P

B C T H I N N E R B O A C

T M A J Q L I T P E D S F

F I L L E R T M B O O T H

I S Y K S A N D P A P E R

L U S L B S R A D T L R U

E R T J K P J T L S O R K

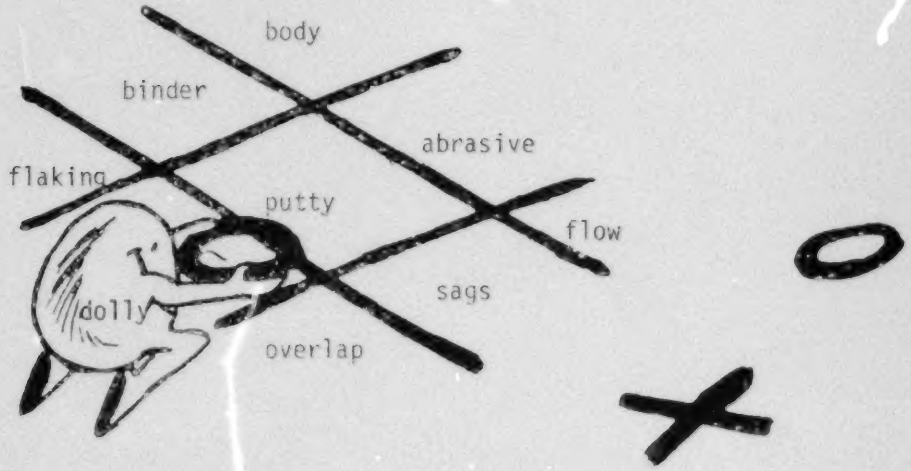
See Activity Key on page IK-2

WORD TIC-TAC-TOE

OBJECTIVE: To provide practice in word recognition and vocabulary building.

MATERIALS: Posterboard; small pieces of paper.

DIRECTIONS: On pieces of cardboard draw the familiar tic-tac-toe game (nine squares). Instead of leaving each space blank, write a different word in each square. Small pieces of paper with X or O printed on them can be used for markers. Two students can then play tic-tac-toe, but cannot cover a space with a marker unless they can read the word. If many words are to be used, prepare a master sheet printed with nine squares and run off copies.



Definitions:
binder - The nonvolatile portion of paint.
body - The thickness of a fluid (viscosity).
abrasive - A substance used for wearing away a surface by rubbing.
dolly - A hand-held metal tool or anvil.
flow - The ability of particles of paint spray to merge together to form a smooth surface.
flaking - Detachment of small pieces of paint film.
putty - A heavy- body material used to fill flaws that are too large for primer.
overlap - That part of the spray band that goes on top of the previous swath of paint.
sags - A paint film that drips or runs.

REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

WORD RELAY

OBJECTIVE: To provide quick recognition of words (by sight and sound) that are necessary for the content material being taught.

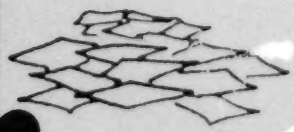
MATERIALS: 25-30 word cards. Words may be printed on 3" tagboard. New word cards may be made to replace words to be learned for each game.

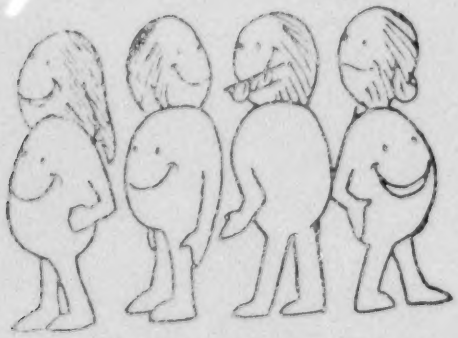
DIRECTIONS: Place cards on the floor or table. Place students on the other side of the room in a line as shown in the diagram. The instructor calls out a word and the first player on each team runs to the cards trying to be the first to find it. When a player returns to his/her team, the instructor calls out another word, and the second player on each team runs to get the word card. The team with the most correct cards at the end of the game wins.

VARIATIONS: The instructor can indicate a word to find and at the signal, each player finds his/her word and runs back so the next player can run, as in a relay.

SAMPLE WORDS:

armature	bushing	volt	viscosity
bore	clearance	crankshaft	differential
axle	lockwasher	journal	misfire
valve	generator	crossmember	horsepower
splines	micrometer	distributor	revolution
cylinder	splines	connecting rod	hone
stroke	tap	condenser	spring
chassis	terminals	rotor	taper
efficiency			volt





BASEBALL

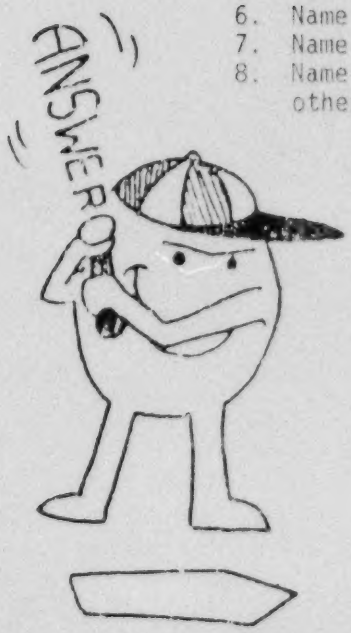
OBJECTIVE: To review subject matter already taught in class. This may be used as a screening device to determine pupils who may need remedial help in retention skills.

MATERIALS: List of questions to be asked of players.

DIRECTIONS: Divide the class into two teams. Place chairs in baseball diamond shape. The first player from Team I starts at home plate (chair) and answers the question asked by the instructor. S/he then moves to first base (chair) if s/he answers correctly. The second player comes to bat at home plate. If s/he answers correctly, then s/he moves to first base and the first player moves to second. The third player comes to bat and gets the next question (ball). If s/he answers correctly, all players move on to the next base. When the first player gets home, s/he has scored a point for Team I. When the second player gets home, s/he has scored another point. If a player misses a question, it's called an "out" and no one moves ahead. When three "outs" are made, the top of the first inning is over and Team 2 comes to bat. At the end of the playing time, the scores are counted to determine the winning team.

SAMPLE QUESTIONS:

1. Name a thin blade of precise thickness that is used to measure the clearance between two parts.
2. Name a test used to find out if a radiator is clogged.
3. Name the central part of a rotating object, such as a wheel.
4. Name the part connected to the crankshaft by a connecting rod.
5. Name the distance between the threads on a screw or bolt.
6. Name the largest gear in the rear axle assembly.
7. Name a common name for a piston pin.
8. Name the term used to indicate an absence of air or any other material.



See Activity Key on Page IK-3

CIRCULAR SAW WORD SEARCH PUZZLE

OBJECTIVE: To provide practice in word recognition, vocabulary and spelling reinforcement.

MATERIALS: A duplicated sheet of the word search puzzle for each student.

DIRECTIONS: The following list of words are all very important words having to do with sawing. The words can be given orally, one-by-one, training the student to visualize the word and find it. A list of the words could be given to each student to aid in word recognition.

Find and circle the following words in the puzzle below. The words may be written forwards, backwards, diagonally, or vertically.

perpendicular
extension
circular
tolerance
pencil
minimum
rule
pine
blade
portable
saw
waste

V B H U R F D S A B J U T F H B J G
D G U T Y H N B F E D S O G H J U K
V G H T R E D F R Y U B L A D E G H
G N J Y T E G H L I C N E P F H J Y
W F G H I X B H U T F D R G H T E D
S F W A S T E F H B C A A F F E D G
B N H T E E F G H J L D N G U O P K
F E W S D N F I P U L E C G H J Y E
S G R E B S D G C F Y J E G J U Y R
I G R E W I G I F G R H J U K N G F
S G R U H O D G H Y U J L I O L E D
H T F M I N I M U M D F R G Y I J N
F G H Y E V B G T F R E D F G H J Y
D G T P U J U Y T R F N J Y U T G R
D G R F H U Y S G H C I R C U L A R
G E H K E L B A T R O P F H J R D B
P D H R E W Q W V C [illegible] N M J U Y H B

See Activity Key on Page IK-3

GO AROUND THE BOARD

OBJECTIVE: To provide practice with sight vocabulary and further develop word recognition skills.

MATERIALS: A rectangular piece of heavy paper, about one-foot square, with a 2-inch margin. The margin is divided into spaces in which words for practice are written; some of the spaces may be used for penalties or rewards. A spinner for determining the number of spaces to be moved; a colored marker for each player.

DIRECTIONS: Each player, in turn, spins the arrow and moves clockwise the number of spaces indicated, starting with "Home Base". S/he reads the word that s/he "lands on". If s/he doesn't know the word, s/he returns to the original space until his/her next turn. The student first going all the way around to "Home Base" wins. (Phrases or sentences may also be used).

<table>
<tr><td>Move Ahead 3</td><td colspan="3">Chamfer</td><td>Move Back 3</td><td colspan="2">Calking</td><td>Cleat</td></tr>
<tr><td>Banister</td><td colspan="5" rowspan="3"></td><td>Dowel</td></tr>
<tr><td>Laminate</td><td>Move Ahead 3</td></tr>
<tr><td>Truss</td><td>Newel</td></tr>
<tr><td>HOME BASE</td><td>Riser</td><td>Veneer</td><td>Move Back 2</td><td>Plumb</td><td>Mortise</td></tr>
</table>

REFERENCE: Wagner, Guy and Max Hosier. Reading Games. New York. Macmillan Publishing Co., Inc., 1970.

TOENAILING WORD SEARCH PUZZLE

OBJECTIVE: To provide practice in word recognition, vocabulary and spelling reinforcement.

MATERIALS: A duplicated sheet of the word search puzzle for each student.

DIRECTIONS: This puzzle can be used in several ways to teach the above skills. The list of words will help the students in word recognition. The words can be given orally, one-by-one, training the student to visualize the word and to find it. The definitions might be given either orally or in writing to review vocabulary and spelling of the hidden words.

Find and circle the following words in the puzzle below. The words may be written forwards, backwards, diagonally, or vertically.

carpentry, claw hammer, toenailed, identify, joint, penny, manufacture, construct, nails, pine

C A R P E N T R Y I N E T U M

U L P J W T D K P M A I L S A

P O A S G J K L Y R W D Y N N

G U K W D G Y U J H B E W D U

W V C H H D Y I O L M N S D F

D T O E N A I L E D O T E T A

E H N F H I M S D T N I O J C

F H S T U O L M A F W F E Y T

K J T X V N J P E N N Y S G U

O J R G H T E I M R F D S A R

G F U J G D A N C V B N M G E

X C C F Y J K E G T E S C N I

G D T U C F D S C V B T R G R

See Activity Key on Page IK-4

WORDO

OBJECTIVE: To provide practice in word recognition and vocabulary skills.

MATERIALS: Squares of paper; cards.

DIRECTIONS: Take square pieces of paper and draw on them 25 blocks--5 across, 5 rows down. Print 25 vocabulary words at random in the 25 blocks (to save time, make a stencil of the divided paper and run off copies as you need them). Give each student a copy of the marked paper. Prepare a set of cards with the same words for the person who will call the game.

The caller reads each word aloud and spells it. The students cover each word with a small piece of cardboard as it is called. When a student has covered five words across, down, or diagonally, s/he wins, and cries "Wordo!" The winner can then be the caller for the next game (if s/he reads well enough).

W	O	R	D	O
gable	baffles	beam	jamb	lath
sill	hardboard	mortise	shingle	header
ribbon	joist	slope	bridging	cornice
wallboard	shim	rafter	flush	soffit
foundation	casing	square	glazing	fascia

VARIATIONS: word - picture
word - definition
word - word
word and picture - definition example on the following page

REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, Jaunary, 1975.

WORD RELAY

OBJECTIVE: To provide quick recognition of words (by sight and sound) that are necessary for the content material being taught.

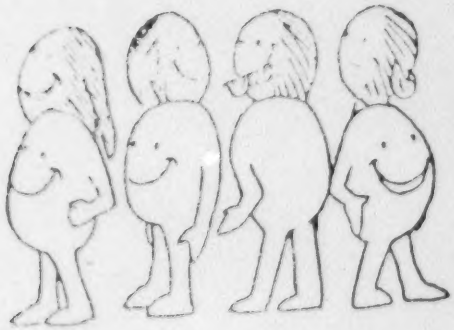
MATERIALS: 25-30 word cards. Words may be printed on 3" tagboard. New word cards may be made to replace words to be learned for each game.

DIRECTIONS: Place cards on the floor or table. Place students on the other side of the room in a line as shown in the diagram. The instructor calls out a word and the first player on each team runs to the cards trying to be the first to find it. When a player returns to his/her team, the instructor calls out another word, and the second player on each team runs to get the word card. The team with the most correct cards at the end of the game wins.

VARIATIONS: The instructor can indicate a word to find and at the signal, each player finds his/her word and runs back so the next player can run, as in a relay.

SAMPLE WORDS:

standard materials	actual size	specifications	jigsaw
plywood	density	template	arbor
stress grading	heartwood	layout	taper
hardwood	fabrication	bevel	mortise
softwood	pilot bit	kerf	V-block
particle board	lamination	chamfer	shaper
nominal size			decorative

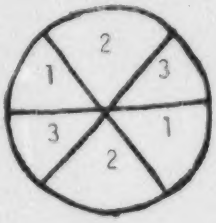


WORD PARCHEESI

OBJECTIVE: To provide practice in vocabulary building.

MATERIALS: Posterboard, chips.

DIRECTIONS: Take a large piece of stiff rectangular paper and make a two-inch margin around the edge. Divide that margin into spaces and in each space write a word, initial sound, or blend. Corner spaces can be used for penalties or rewards. Example: Move back four spaces, take another turn, etc.

Go Forward 2 Spaces	Dado	Rabbet	Coped Joint	Spline Miter	Go Back 2 Spaces
Edge Butt Joint	Make a disk with numbers and an arrow. The student spins the arrow and moves the number of spaces indicated. S/he must read each word or sound as s/he moves to each space. S/he must read and define all the words. If s/he cannot, s/he must go back to the previous move. The first student to go around the board wins the game. 				Lap Dovetail
Spline Joint					Glued and Blocked
Dovetail Dado					Plain Butt
Lap Joint					Hopper
Rabbeted Ledge					Doweled Butt
Miter					Synthetic Material
Go Back 2 Spaces	Doweled Joint	Tongue and Grooved	Filleted Joint	Battened Joint	S T A R T

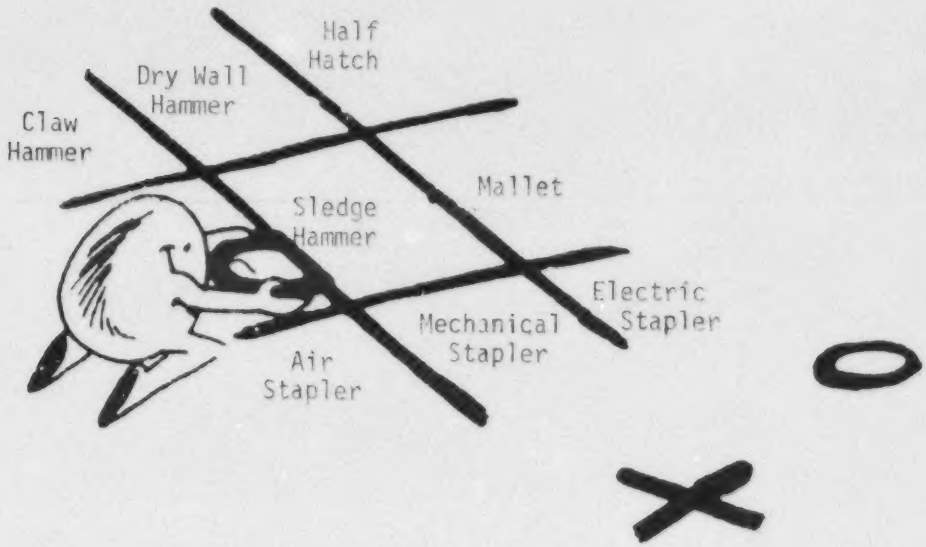
REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No.4, January, 1975.

WORD TIC-TAC-TOE

OBJECTIVE: To provide practice in vocabulary building.

MATERIALS: Posterboard; small pieces of paper.

DIRECTIONS: On pieces of cardboard, draw the familiar tic-tac-toe game (nine squares). Instead of leaving each space blank, write a different word in each square. Small pieces of paper with X or O printed on them can be used for markers. Two students can then play tic-tac-toe, but cannot cover a space with a marker unless they can read the word. If many words are to be used, prepare a master sheet printed with nine squares and run off copies.



2 Students - 1 Questioner
Small marker for X - O

BASEBALL

OBJECTIVE: To review subject matter already taught in class. This may be used as a screening device to determine pupils who may need remedial help in retention skills.

MATERIALS: List of questions to be asked of players.

DIRECTIONS: Divide the class into two teams. Place chairs in baseball diamond shape. The first player from Team I starts at home plate (chair) and answers the question asked by the instructor. S/he then moves to first base (chair) if s/he answers correctly. The second player comes to bat at home plate. If s/he answers correctly, then s/he moves to first base and the first player moves to second. The third player comes to bat and gets the next question (ball). If s/he answers correctly, all players move on to the next base. When the first player gets home, s/he has scored a point for Team I. When the second player gets home, s/he has scored another point. If a player misses a question, it's called an "out" and no one moves ahead. When three "outs" are made, the top of the first inning is over and Team 2 comes to bat. At the end of the playing time, the scores are counted to determine the winning team.

SAMPLE QUESTIONS:

1. Name a type of construction in which the interior wall finish is applied in a dry condition, generally in the form of sheet materials.
2. Name a beam connecting pairs of opposite rafters above an attic floor.
3. Name the upper member of a column pilaster, door cornice, moulding, and the like.
4. Name a wide moulding of various widths and thicknesses used to trim doors and windows.
5. Name a perpendicular supporting member circular or rectangular in section, usually consisting of a base, shaft, and capital.
6. Name a type of construction in which the structural parts are of wood, or dependent upon a wood frame for support.
7. Name a decorative element made up of moulded members, usually placed at or near the top of an exterior or interior wall.
8. Name the rectangular groove in a board or plank.

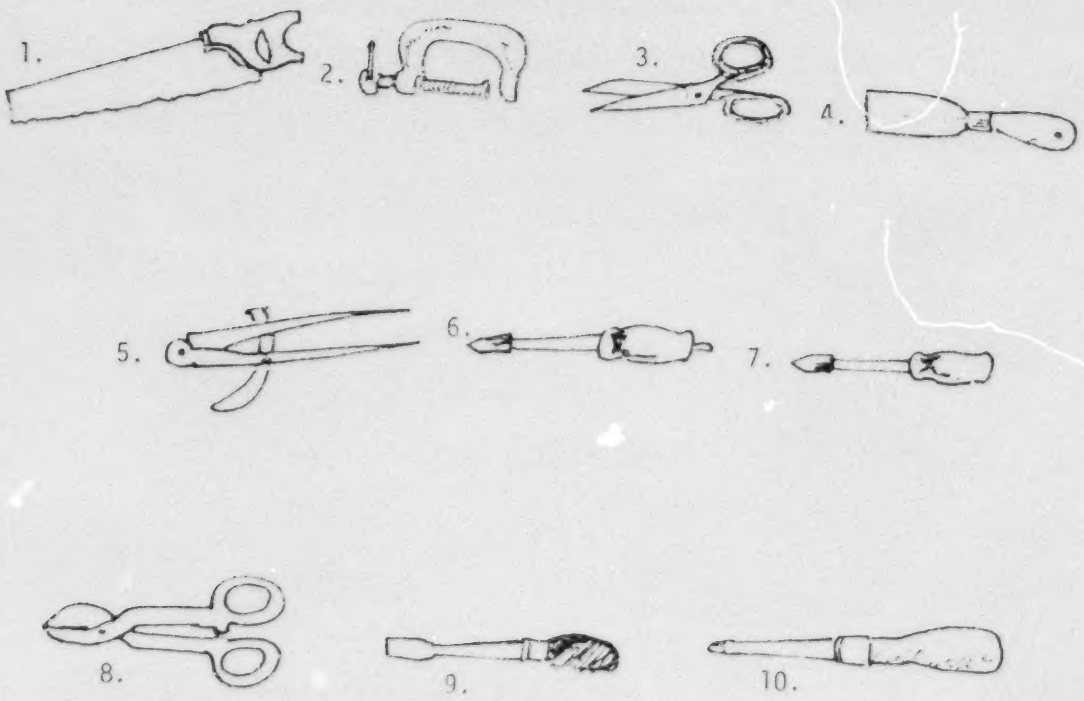
See Activity Key on page IK-4

HAND TOOL IDENTIFICATION I

OBJECTIVE: To review subject material already covered in class.

MATERIALS: Duplicated sheets for each student.

DIRECTIONS: Identify the hand tools and write the name of each tool on the answer sheet provided.



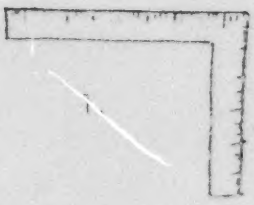
See Activity key on Page IK-4

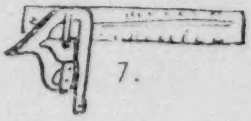
HAND TOOL IDENTIFICATION II

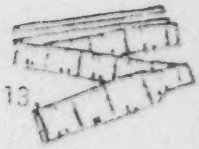
OBJECTIVE: To review subject material already covered in class.

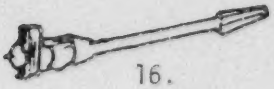
MATERIALS: Duplicated sheets for each student.

DIRECTIONS: Identify the hand tools and write the name of each tool on the answer sheet provided.









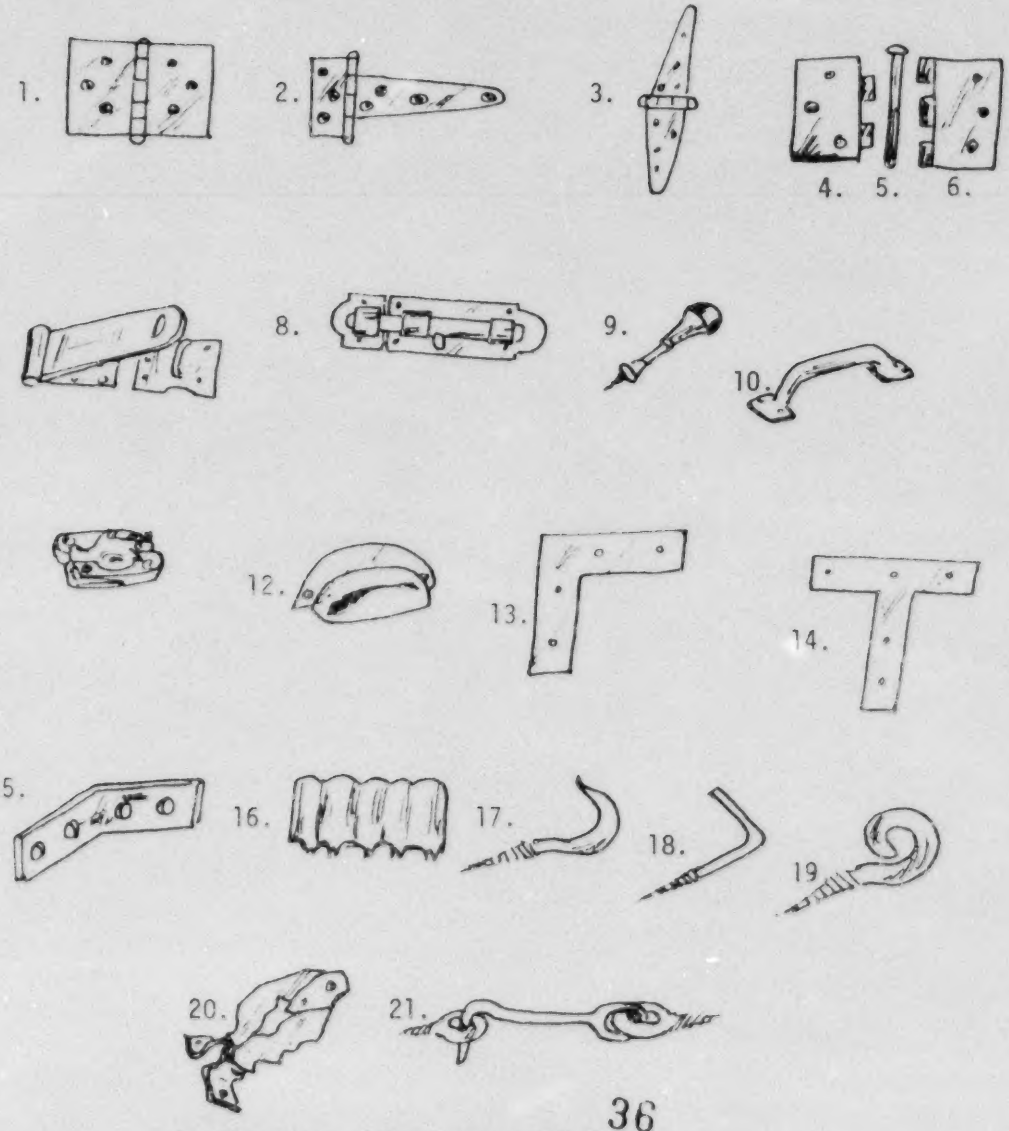
See Activity Key on Page IK-5

HARDWARE IDENTIFICATION

OBJECTIVE: To review subject material already covered in class.

MATERIALS: A duplicated sheet for each student.

DIRECTIONS: Identify the following hardware items and write the name of each item on the answer sheet provided.



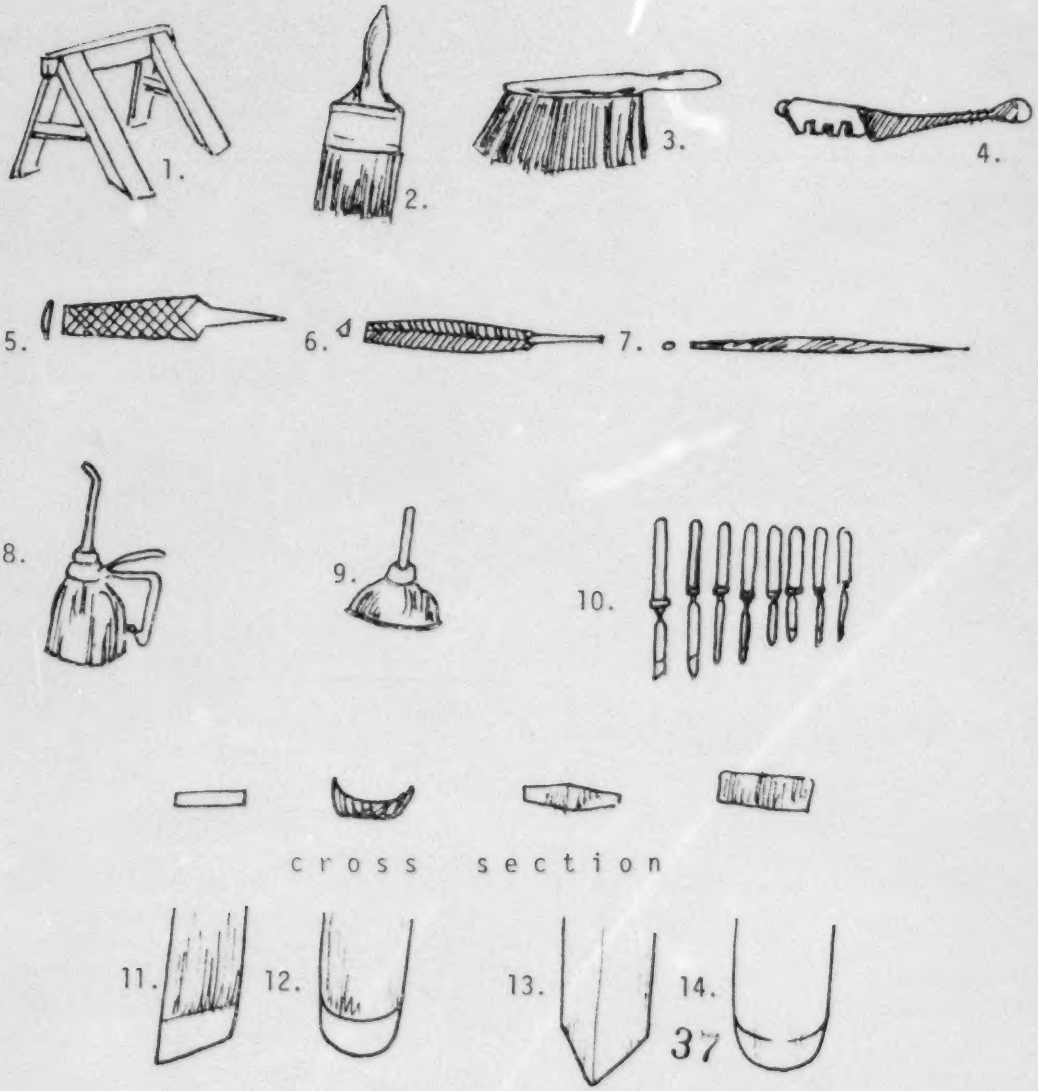
See Activity Key on Page IK-5

WOODWORK IDENTIFICATION

OBJECTIVE: To review subject material already covered in class.

MATERIALS: Duplicated sheets for each student.

DIRECTIONS: Identify the following hand tools and write the name of each tool on the answer sheet provided.



See Activity Key on Page IK-6

GO AROUND THE BOARD

OBJECTIVE: To provide practice with sight vocabulary and further develop word recognition skills.

MATERIALS: A rectangular piece of heavy paper, about one-foot square, with a 2-inch margin. The margin is divided into spaces in which words for practice are written; some of the spaces may be used for penalties or rewards. A spinner for determining the number of spaces to be moved; a colored marker for each player.

DIRECTIONS: Each player, in turn, spins the arrow and moves clockwise the number of spaces indicated, starting with "Home Base". S/he reads the word that s/he "lands on". If s/he doesn't know the word, s/he returns to the original space until his/her next turn. The pupil first going all the way around to "Home Base" wins. (Phrases or sentences may also be used).

Move Ahead 3	Arrowhead		Move Back 3	Dimension Line	Section Line
Leader					Visible Line
Hidden Line					Cutting Plane Line
Center Line					Shapen
HOME BASE	Extension Line	Break Lines	Move Back 2	Phantom Line	Mill

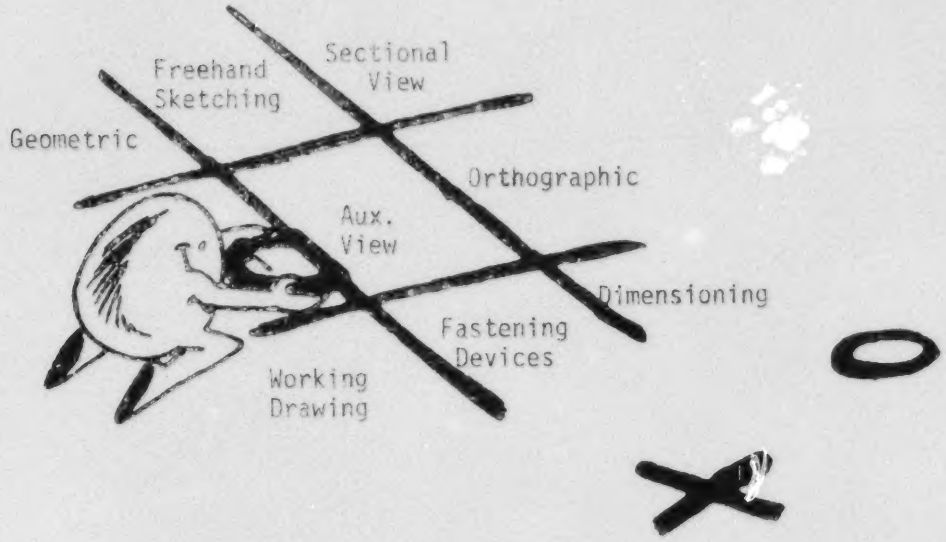
REFERENCE: Wagner, Guy and Max Hosier. Reading Games. New York. Macmillan Publishing Co., Inc., 1970.

WORD TIC-TAC-TOE

OBJECTIVE: To provide practice in vocabulary building.

MATERIALS: Posterboard; small pieces of paper.

DIRECTIONS: On pieces of cardboard, draw the familiar tic-tac-toe game (nine squares). Instead of leaving each space blank, write a different word in each square. Small pieces of paper with X or O printed on them can be used for markers. Two students can then play tic-tac-toe, but cannot cover a space with a marker unless they can read the word. If many words are to be used, prepare a master sheet printed with nine squares and run off copies.



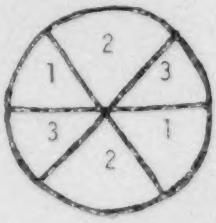
2 Students - 1 Questioner
Small marker for X - O

WORD PARCHEESI

OBJECTIVE: To provide practice in vocabulary building.

MATERIALS: Posterboard, chips.

DIRECTIONS: Take a large piece of stiff rectangular paper and make a two-inch margin around the edge. Divide that margin into spaces and in each space write a word, initial sound, or blend. Corner spaces can be used for penalties or rewards. Example: Move back four spaces, take another turn, etc.

Go Forward 2 Spaces	T-Square	Triangle	Scale	Protractor	Go Back 2 Spaces
Lead	Make a disk with numbers and an arrow. The student spins the arrow and moves the number of spaces indicated. S/he must read each word or sound as s/he moves to each space. S/he must read and define all the words. If s/he cannot, s/he must go back to the previous move. The first student to go around the board wins the game. 				Curve
Drafting Board					Pointer
Drafting Machine					Template
Protractor					Dusting Brush
Engineer's Scale					Tracing Cloth
Adjustable Triangle					Compass
Go Back 2 Spaces	Mechanical Pencil	Architect's Scale	Spin Again	Transit	S T A R T

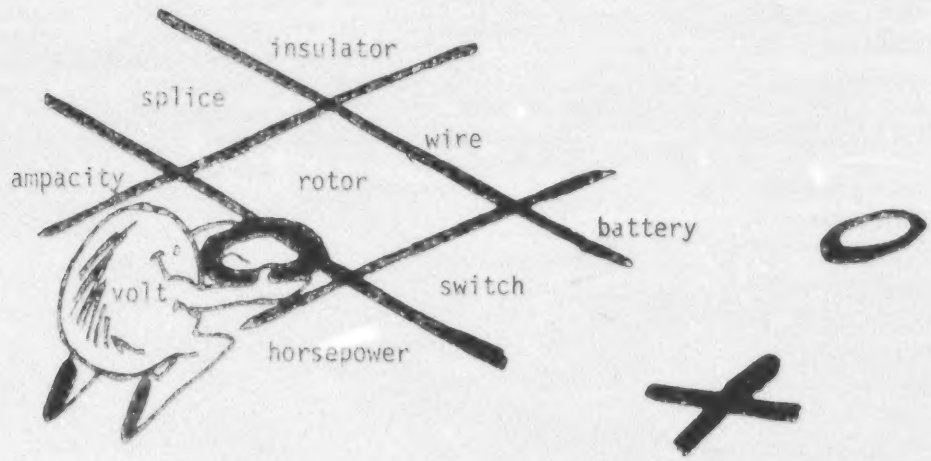
REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

WORD TIC-TAC-TOE

OBJECTIVE: To provide practice in word recognition and vocabulary building.

MATERIALS: Posterboard; small pieces of paper.

DIRECTIONS: On pieces of cardboard draw the familiar tic-tac-toe game (nine squares). Instead of leaving each space blank, write a different word in each square. Small pieces of paper with X or O printed on them can be used for markers. Two students can then play tic-tac-toe, but cannot cover a space with a marker unless they can read the word. If many words are to be used, prepare a master sheet printed with nine squares and run off copies.



Definitions:
ampacity - Current-carrying capacity of conductor expressed in amperes.
battery - Device that changes chemical energy into electrical energy.
rotor - Portion of alternating current machine which turns or rotates.
switch - Device used to connect and disconnect flow of current.
horsepower - Unit of electrical energy equal to 746 watts of electrical power.
wire - Electrical conductor in form of slender rod.
insulator - Nonconductor used to support current-carrying conductor.
splice - Connection made by connecting two or more wires.
volt - Unit used to measure electrical pressure.

REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

BASEBALL

OBJECTIVE: To review subject matter already taught in class. This may be used as a screening device to determine pupils who may need remedial help in retention skills.

MATERIALS: List of questions to be asked of players.

DIRECTIONS: Divide the class into two teams. Place chairs in baseball diamond shape. The first player from Team I starts at home plate (chair) and answers the question asked by the instructor. S/he then moves to first base (chair) if s/he answers correctly. The second player comes to bat at home plate. If s/he answers correctly, then s/he moves to first base and the first player moves to second. The third player comes to bat and gets the next question (ball). If s/he answers correctly, all players move on to the next base. When the first player gets home, s/he has scored a point for Team I. When the second player gets home, s/he has scored another point. If a player misses a question, it's called an "out" and no one moves ahead. When three "outs" are made, the top of the first inning is over and Team 2 comes to bat. At the end of the playing time, the scores are counted to determine the winning team.

SAMPLE QUESTIONS:

1. Name an instrument used to measure the amount of electric current flow in amperes.
2. Name the current-carrying capacity of conductor expressed in amperes.
3. Name a flexible, metallic sheathed cable used for interior wiring.
4. Name a device that changes chemical energy into electrical energy.
5. Name a circuit which supplies a number of outlets for lighting or appliances.
6. Name a heavy solid conductor at main power source to which branch circuits are connected.
7. Name a term commonly used to identify armored cable.
8. Name a term which expresses intensity of a beam of light.

See Activity Key on Page IK-6

MACHINE SHOP WORD SEARCH PUZZLE

OBJECTIVE: To provide practice in word recognition and spelling reinforcement.

MATERIALS: A duplicated sheet with the word search puzzle for each student.

DIRECTIONS: The words can be given orally, one-by-one, training the student to visualize the word and find it. The definitions might be given either orally or in writing to review vocabulary and spelling of hidden words. The list of words might be given to help these students in word recognition.

Find and circle the following words in the puzzle below.

iron	rule	link	stock	tends	file
metal	wrench	bit	index	level	pliers
cab	drill	safety	tap	soft	jig
chuck key	dip	lathe	scale	hand	bar
line	apply	pins	gib	mill	gong

B I G H W B K E G M Y P Y

I Z S E S P G N O G T S E

T D N A H A R F X I E T K

B X I B R T C K E J F O K

Q O P G Y Z A M S B A C C

S N W J B M E L A C S K U

O U E P M T N R X J O U H

F I L E A X C F Z M S B C

T D U L E D Y A N O R I A

E W R E N C H B F K E Q X

N E R I I J X E D N I G J

D R A Q L I N K M I L L H

S L E V E L C Y L P P A I

See Activity Key on Page IK-6

I KNOW IT

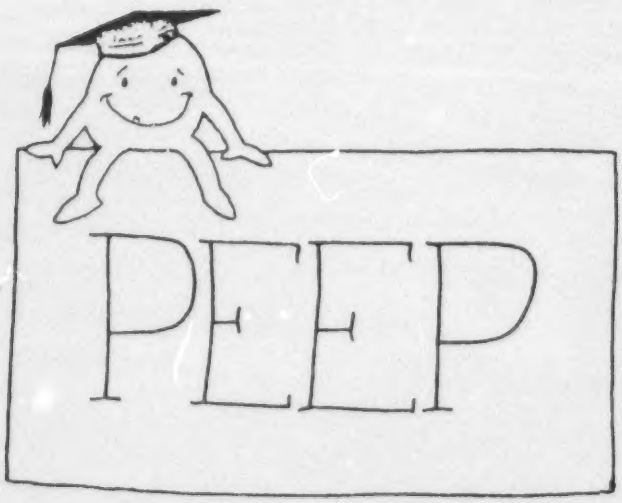
OBJECTIVE: To provide practice in word recognition and vocabulary skills.

MATERIALS: Index cards.

DIRECTIONS: Print words on a set of index cards. Place them in a pile, face down, before two students. As each student draws a card, s/he must read aloud the word printed on it. The person with the most cards wins. The meaning of the words can be part of the activity also.

SAMPLE WORDS:

firebrick	jamb	tread	form
draft	hearth	pilaster	footing
chimney	lintels	mason	module
flue	masonry	grout	grade
mosaic	veneer	joint	scaffold
platform	span	lap	traprock
mortar	rise	porch	terra cotta
pier	traprock	lath	withe



REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

WORD SEARCH PUZZLE

OBJECTIVE: To provide practice in word recognition, vocabulary building, and spelling reinforcement.

MATERIALS: A duplicated sheet with the word search puzzle for each student.

DIRECTIONS: Find and circle the following words in the puzzle below.

apron	hearth	mosaic	steps
backfill	lathe	rise	tier
bond	mason	span	veneer
chimney			

B O N D L Z C H I M N E Y O

A P R O N O I E B A O B A C

C Z Q U A N L A P S Z V N I

K B A T S B S R M O S A I C

F R R I S E E T O N T N P S

I V E N E E R H E L E A B C

L T I P R S C N L G P Q R S

L A T H E T T L G O S P A N

See Activity Key on Page IK-7

WORD PARCHEESI

OBJECTIVE: To provide practice in vocabulary building.

MATERIALS: Posterboard, chips.

DIRECTIONS: Take a large piece of stiff rectangular paper and make a two-inch margin around the edge. Divide that margin into spaces and in each space write a word, initial sound, or blend. Corner spaces can be used for penalties or rewards. Example: Move back four spaces, take another turn, etc.

Go Forward 2 Spaces	Level	Brick Hammer	Steel Square	Steel Tape	Go Back 2 Spaces
Mortar Box	Make a disk with numbers and an arrow. The student spins the arrow and moves the number of spaces indicated. S/he must read each word or sound as s/he moves to each space. S/he must read and define all the words. If s/he cannot, s/he must go back to the previous move. The first student to go around the board wins.				Cross Joint
Corner Blocks					Brick Set
Stretcher Course					Folding Rule
Header Course					Joinier
Lime					Trowel
Bond					Mason's Line
Go Back 2 Spaces	Cement	Metal Tie	Closure Joint	Mortar Mixer	S T A R T

REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

BASEBALL

OBJECTIVE: To review subject matter already taught in class. This may be used as a screening device to determine pupils who may need remedial help in retention skills.

MATERIALS: List of questions to be asked of players.

DIRECTIONS: Divide the class into two teams. Place chairs in baseball diamond shape. First player from team I starts at home plate (chair) and answers the question asked by the instructor. S/he then moves to first base (chair) if s/he answers correctly. The second player comes to bat at home plate. If s/he answers correctly then s/he moves to first base and the first player moves to second. The third player comes to bat and gets the next question (ball). If s/he answers correctly all players move on to the next base. When the first player gets home, s/he has scored a point for team I. When the second player gets home, s/he has scored another point. If a player misses a question, it's called an "out" and no one moves ahead. When three "outs" are made, the top of the first inning is over and team 2 comes to bat. At the end of the playing time, the scores are counted to determine the winning team.

SAMPLE QUESTIONS:

1. Name a dry material for binding other materials or articles together.
2. Name a type of brick that has been replaced by the term building brick.
3. Name a wall on each side of a set of steps that is higher than the platform and serves as a rail.
4. Name proportioned mixture of cement, sand, gravel, and water which is hardened by hydraulic chemical reaction.
5. Name a row of brick or other masonry units laid in a wall; to arrange in a row.
6. Name the front or exposed surface of a wall.
7. Name a metal or plastic material used any place where there is danger of leakage from rain water or snow.
8. Name a row thickness of bricks in a wall.

See Activity Key on page IK-7

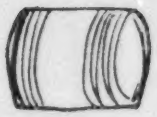
NAMING THE PLUMBING PARTS

OBJECTIVE: To review subject material already covered in class.

MATERIALS: A duplicated sheet for each student.

DIRECTIONS: Identify each of the plumbing items and give their principle uses.

Identify each of the following plumbing items and give their principle uses.



I.
a. Name _____
b. Use _____

2.
a. _____
b. _____

3.
a. _____
b. _____

4.
a. _____
b. _____

5.
a. _____
b. _____

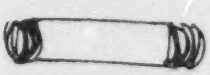
6.
a. _____
b. _____

7.
a. _____
b. _____

8.
a. _____
b. _____

9.
a. _____
b. _____

10.
a. _____
b. _____



11.
a. _____
b. _____

12. a. _____
    b. _____

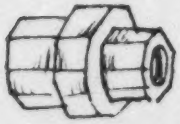
13. a. _____
    b. _____

14. a. _____
    b. _____

15. a. _____
    b. _____

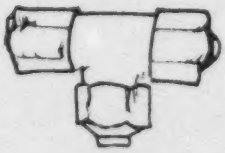
16. a. _____
    b. _____

17. a. _____
    b. _____



18. a. _____
    b. _____

19. a. _____
    b. _____



20. a. _____
    b. _____

21. a. _____
    b. _____

See Activity Key on Page IK-7

WORDO - REFRIGERATION I

OBJECTIVE: To provide practice in vocabulary skills.

MATERIALS: Squares of paper, cards

DIRECTIONS: Take square pieces of paper and draw on them 25 blocks--5 across, 5 rows down. Print 25 vocabulary words at random in the 25 blocks (to save time, make a stencil of the divided paper and run off copies as you need them). Give each student a copy of the marked paper. Prepare a set of cards with the same words for the person who will call the game.

The caller reads each word aloud and spells it. Students cover each word with a small piece of cardboard as it is called. When a student has covered five words across, down, or diagonally, s/he wins, and cries "Wordo!" The winner can then be the caller for the next game (if s/he reads well enough).

W	O	R	D	O
Ambient Temperature	Convection	Conduction	Heat of Compression	Latent Heat
Sensible Heat	Unit of Heat	Capacitor	Contactor	Switches
Relay	Circuit Breaker	F R E E	Resistor	Fan Motor
Defrost Timer	Relief Valve	Service Valves	Relative Humidity	Dry Bulb Thermometer
Wet Bulb Thermometer	Automatic Expansion Valve	Overload Protector	Thermostatic Expansion Valve	Solid State Expansion Valve

REFERENCE: TECHNIQUES for Teachers of Adults. Vol XV, No. 4, January, 1975.

WORDO - REFRIGERATION II

OBJECTIVE: To provide practice in vocabulary skills.

MATERIALS: Squares of paper, cards

DIRECTIONS: Take square pieces of paper and draw on them 25 blocks--5 across, 5 rows down. Print 25 vocabulary words at random in the 25 blocks (to save time, make a stencil of the divided paper and run off copies as you need them). Give each student a copy of the marked paper. Prepare a set of cards with the same words for the person who will call the game.

The caller reads each word aloud and spells it. Students cover each word with a small piece of cardboard as it is called. When a student has covered five words across, down, or diagonally, s/he wins, and cries "Wordo!" The winner can then be the caller for the next game (if s/he reads well enough).

W	O	R	D	O
Thermometer	Tube Cutter	Tee	Elbow	Coupling
Adapter	Compound Gauge	High Pressure Gauge	Hose	Tube
Fan	Filter-Dryer	Electric Motor	Drive Belt	Fuse
Refrigerator	Refrigerant Cylinder	Goggles	Compressor	Thermostat
Condenser	Regulating Valve	Sight Glass	Evaporator	Halide Torch

VARIATIONS: word - picture
word - definitions
word - word
word and picture - definition example on the following page

REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

WORD SEARCH PUZZLE - REFRIGERATION

OBJECTIVE: To provide practice in Word Recognition, Vocabulary, and Spelling Reinforcement.

MATERIALS: A duplicated sheet wtih the word search puzzle for each student.

DIRECTIONS: The following puzzle can be used in several ways to teach the above skills. The words can be given orally, one-by one, training the student to visualize the word and find it. The definitions might be given either orally or in writing to review vocabulary and spelling of the hidden words. In individual situations, where particular students have few, if any, reading skills, the list of words might be given to help these students in word recognition.

On the following page is a list of statements to help the students locate the words in the puzzle.

PARTS OF THE REFRIGERATOR

Complete the questions and locate in the puzzle the following terms:

sight glass	drive belt
regulating valve	fan
thermostat	compressor
filter-dryer	evaporator
thermometer	condenser

1. The compressor and the electric motor are often connected with a _____ _____
2. Shows the amount of refrigerant in a refrigerating system. _____ _____
3. Cleans and dries the refrigerant. _____ _____
4. Measures the temperature in a refrigerator. _____ _____
5. Gives off heat from the refrigerator. _____ _____
6. Helps carry heat away from the condenser. _____ _____
7. Can be set to different temperatures. _____ _____
8. Pumps the refrigerant through the refrigerator system. _____ _____
9. Absorbs the heat in the refrigerator. _____ _____
10. Controls the pressure and flow of refrigerant. _____ _____

REFERENCE: Althouse, Andrew D., Turnquist, Carl H., and Alfred F. Bracciano. Modern Refrigeration and Air Conditioning, Goodheart-Wilcox, Homewood, Illinois. 1968.

See Activity Key on Page IK-8

PUZZLE - PARTS OF THE REFRIGERATOR

F A N T F T H E R M O S T A T O P N Q

R H D R I V E B E L T R S B H Q P B P

E P C M L R B C R N O F Y B E Z Y T B

G Z T X T S V U P Q M P C T R R P W C

U D P Q E V A P O R A T O R M M F X F

L L R T R S W S O W V U M Z O Z G J T

A U I O D R T G P I L W P T M X Y Q X

T R X Y R Z W B N W L C R T E K T F R

I Y U D Y T R W Q X M D E P T R M W P

N M D S E Q T M V A I Z S R E Y C G T

G W O P R W X C F D T H S P R Q W Y B

V P I B N R E D H P Z X O U E N M G H

A U H T C O N D E N S E R K K Y T H B

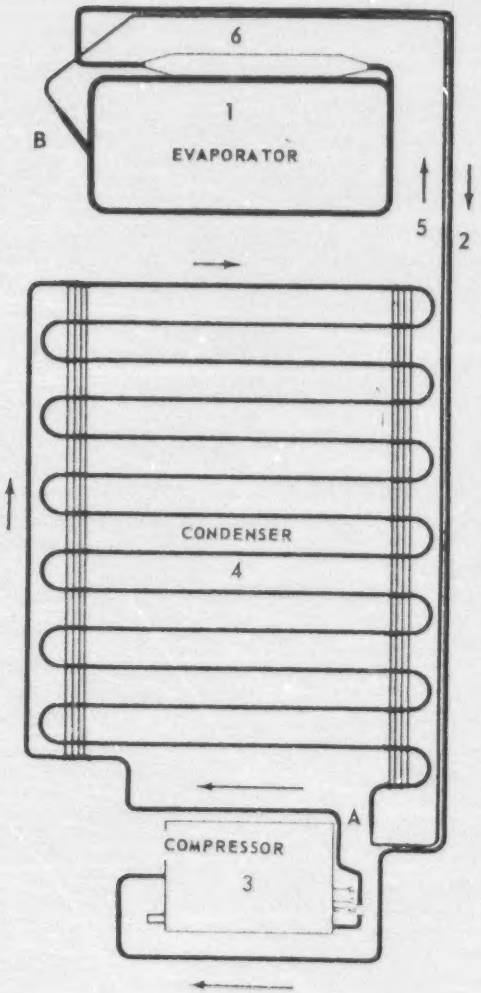
L R T Y C P T G B P S Q D T W P W Y J

V S I G H T G L A S S T S U R H P P L

E Y U H G Z X Y P D G T E Q P G T Z X

See Activity Key on page IK-8

ILLUSTRATIONS - REFRIGERATOR



1. Evaporator - Picks up heat
2. Suction line - Carries heat away from evaporator
3. Compressor - pumps heat from evaporator to condenser
4. Condenser - passes heat off into the air
5. Capillary tube - controls amount of refrigerant pumped to the evaporator. (A-B)
6. Accumulator - Storage tank for refrigerant

REFERENCE: Althouse, Andrew D., Turnquist, Carl H., and Alfred F. Bracciano. Modern Refrigeration and Air Conditioning, Goodheart-Wilcox, Homewood, Illinois. 1968.

WORDO

OBJECTIVE: To provide practice in word recognition and vocabulary skills.

MATERIALS: Squares of paper; cards.

DIRECTIONS: Take square pieces of paper and draw on them 25 blocks--5 across, 5 rows down. Print 25 vocabulary words at random in the 25 blocks (to save time, make a stencil of the divided paper and run off copies as you need them). Give each student a copy of the marked paper. Prepare a set of cards with the same words for the person who will call the game.

The caller reads each word aloud and spells it. The students cover each word with a small piece of cardboard as it is called. When a student has covered five words across, down, or diagonally, s/he wins, and cries "Wordo!" The winner can then be the caller for the next game (if s/he reads well enough).

W	O	R	D	O
duct	hopper	frustum	rise	spout
gauge	crimp	pitch	reducer	taper
apex	pipe	pyramid	rivet	radius
elbow	flume	span	cone	prism
tee	base	butt	flow	circular

VARIATIONS: word - picture
word - definition
word - word
word and picture - definition example on the following page

REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

BINGO - SHEET METAL

OBJECTIVE: To learn names and/or uses of tools used in the various trades or professions.

MATERIALS:
A. Packets of sketches of tools for each student.
B. A Tool "Bingo" Card for each student.

DIRECTIONS: The instructor or "Caller" takes a group of flash cards with tool names and/or uses and displays them one at a time aloud. The students then cover the one area which best fits.

VARIATIONS:
I. Slides, photos or the actual tool may be shown.

II. A word description of the use of the tool or instrument may be given.

III. Cards may be used as an evaluation instrument. Students number from 1 to 12 on paper and write the name and/or use of the tool or instrument.

IV. The caller gives the definition and the student must cover the term or word.

V. The caller displays a picture of equipment with no word description; the student must cover the word or term.

BINGO - SHEET METAL

B	I	N	G	O
Pattern	Solid Punch	Scriber	Notcher	Squaring Shears
Bench Plate	Gloves	Rivet	Mallet	Hand Seamer
Self-tapping Screw	Bar Folder	Framing Square	Stakes	Wire Edge
Hand Groover	Hack Saw	Cylinder	Power Shears	Crimp
File	Sheet Metal	Bead	Lap Seam	Cone

BINGO - DEFINITIONS FOR CALLER (SHEET METAL)

1. Metal in thin sheets or plates.
2. A barrel-shaped object.
3. Used to protect the worker's hands when handling sharp metal.
4. A set of tools to enable the sheet metal craftsman to make a variety of bends by hand.
5. Reduces the diameter of a cylinder permitting it to be slipped into another cylinder, such as vent or stove pipe.
6. A metal fastener that requires the use of a hammer to install it.
7. A hand tool used to provide force when bending sheet metal.
8. A saw with a thin removable blade.
9. A portable electric device used for cutting thin metal.
10. A sharp metal object used for marking on metal.
11. A device used to hold stakes.
12. Used on cylinder-shaped containers (buckets) to give strength to the end of the container.
13. A seam that requires no bending of the sheet metal.
14. A very hard tool that is used to remove rough edges.
15. It is used to give additional rigidness to cylindrical sheet metal.
16. Used for punching small holes in sheet metal.
17. A full-sized drawing of the surface of an object stretched out.
18. A type of metal fastener that is easily installed and removed.
19. Ideal for cutting corners or the edge of sheet metal.
20. Designed to bend sheet metal to form edges and to prepare metal for a wire edge. Seams can also be formed on this.
21. Used to square and trim large sheets of metal.
22. Used for locking together grooved seam joints.

23. A handy tool to use when marking a straight line.

24. Metal ones are not filled with ice cream.

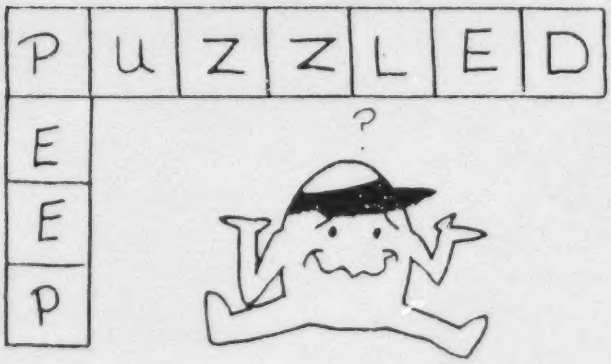
See Activity Key on page IK-8

CROSSWORD PUZZLE - METAL FABRICATION

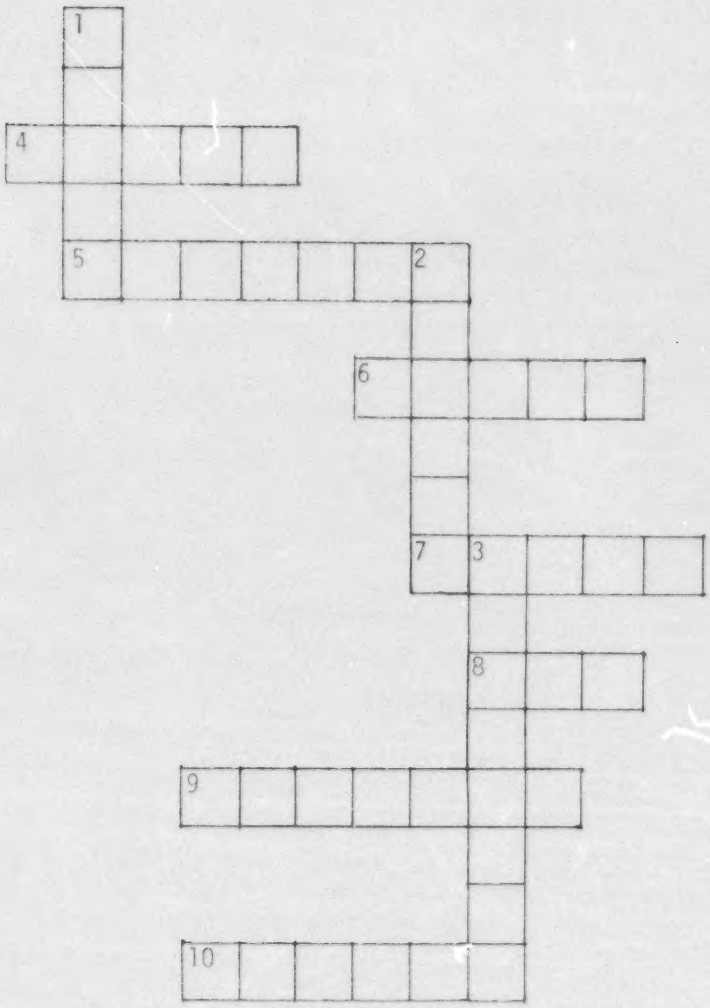
OBJECTIVE: To answer definitions or incomplete sentences and to fit these answers into a crossword puzzle.

MATERIALS: A duplicated sheet with the crossword diagram for each student.

DIRECTIONS: Give each student a dittoed sheet of paper with a crossword diagram and a list of questions. The descriptive clues are listed on the same page as the puzzle. The students find the answers through individual research, then fit the answers into the puzzle. When a number of students have completed the puzzle, ask one of them to put it on the chalkboard, then discuss each answer with the class. This type of puzzle can be used as a launching pad for class discussions and has the added virtue of giving the slower students a sense of accomplishment. The completed crossword puzzle also serves as a ready-made study guide for the students.



CROSSWORD PUZZLE - METAL FABRICATION



DOWN

1. For cutting thin metal
2. Hand protection
3. Barrel-shaped

ACROSS

4. Some have a button head
5. A type of rivet hammer
6. Gives off heat
7. Self-tapping
8. A type of seam
9. A type of square
10. Melts at a low temperature

See Activity Key on Page IK-8

NAMING SHEET METAL JOINTS AND BENDINGS

OBJECTIVE: To provide practice in naming sheet metal joints and bendings.

MATERIALS: A duplicated sheet for each student.

DIRECTIONS: Name the joints and bends from the following page on the lines below.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

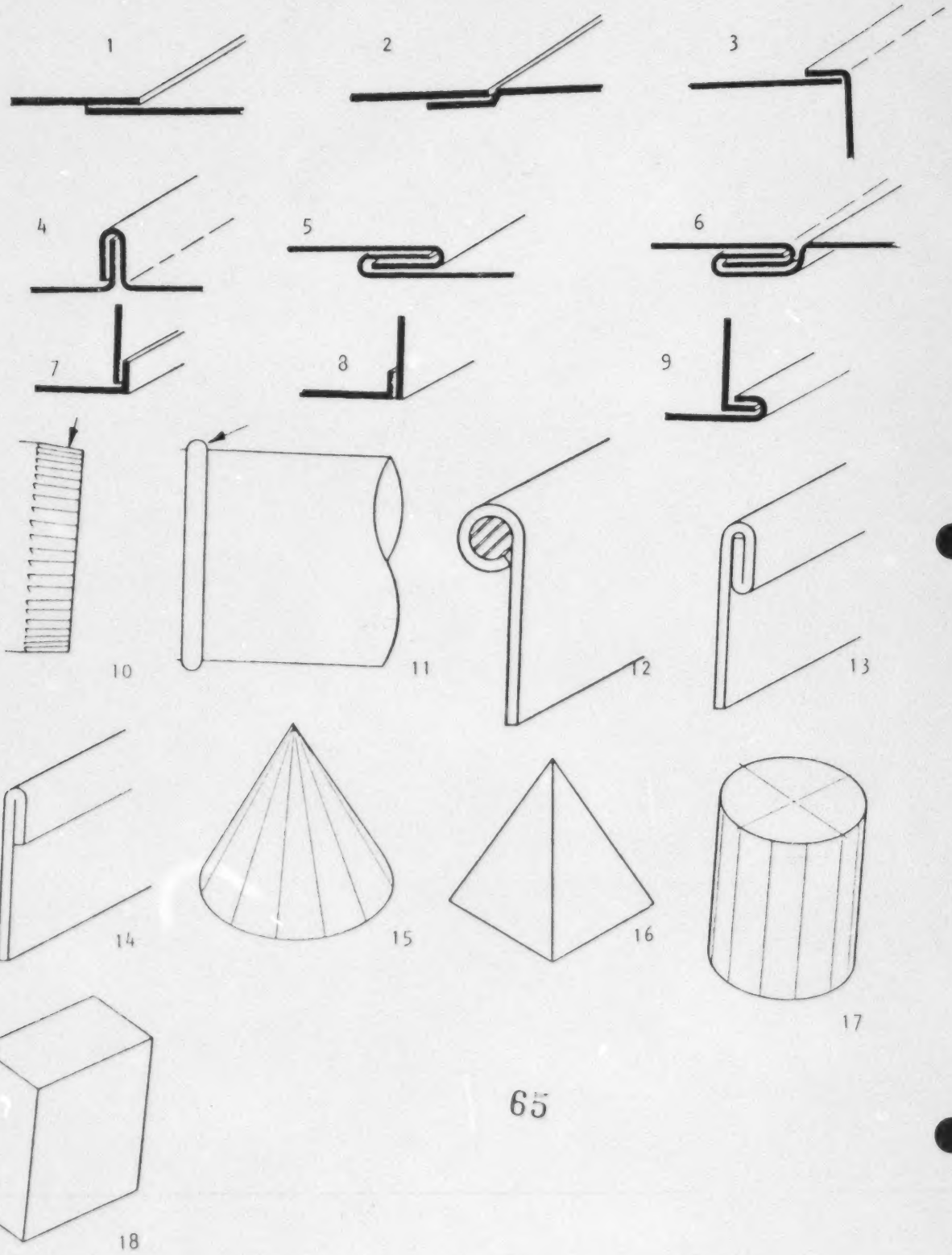
16.

17.

18.

See Activity Key on page IK-9

CAN YOU NAME THESE JOINTS AND BENDS?

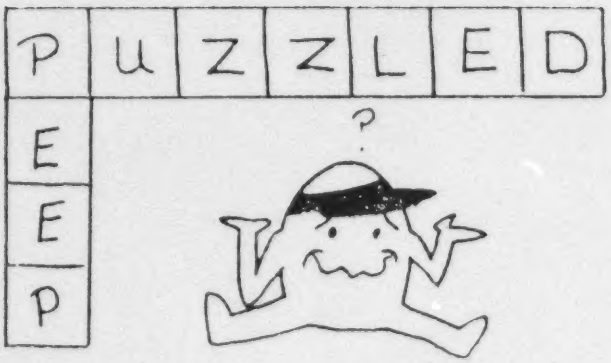


METAL CUTTING CROSSWORD PUZZLE

OBJECTIVE: To answer definitions or incomplete sentences relating to metal cutting and to fit the answers into a crossword puzzle.

MATERIALS: A duplicated sheet with the crossword diagram for each student.

DIRECTIONS: Give each student a dittoed sheet of paper with a crossword diagram and a list of questions. The students find the answers through individual research, and fit the answers into the puzzle. When a number of students have completed the puzzle, ask one of them to put it on the chalkboard, then discuss each answer with the class.



Complete the puzzle by filling the blanks with the correct word.

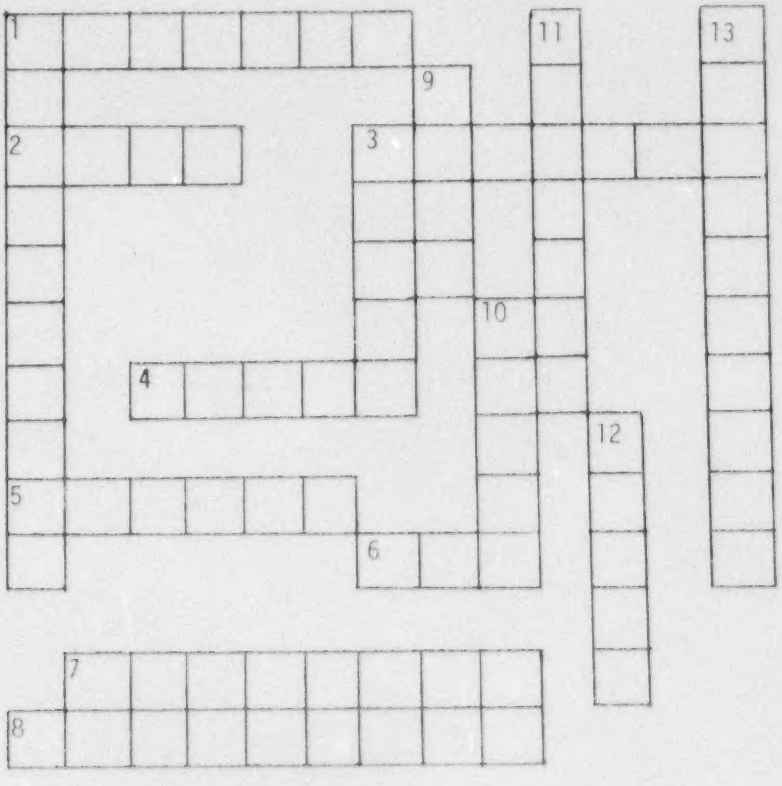
position	blade	horizontal
waste	tighten	metal stalk
try square	adjust	vise
gap	frame	rule
wing nut	clamp	hacksaw

ACROSS

1. Tool used for cutting metal
2. Tool used for measuring
3. Tighten it with your fingers
4. Supports the saw blade
5. To set at correct position
6. Opening
7. Place where a person or thing is
8. Tool used for squaring

DOWN

1. At right angle to a vertical line
3. Part that is no good
9. Tool fastened to work bench
10. A device for holding things
11. To make tight
12. Part of a saw that cuts
13. Metal project material



See Activity Key on Page IK-9

I KNOW IT

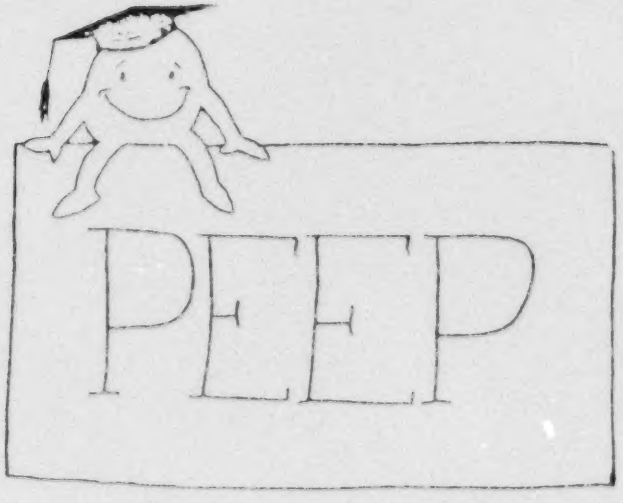
OBJECTIVE: To provide practice in vocabulary skills.

MATERIALS: Index cards

DIRECTIONS: Print words on a set of index cards. Place them in a pile, face down, before two students. As each student draws a card, s/he must read aloud the word printed on it. The person with the most cards wins. The meaning of the words can be part of the activity also.

SAMPLE WORDS:

Compression	Spark tester
Flywheel	Torque wrench
Crankshaft	Seal press
Piston	Ring compressor
Muffler	Lock nut
Air cleaner	Spark plug wrench
Valve	Valve spring compressor
Camshaft	Head
Condenser	Shroud
Magneto coil	Air jet
Air cleaner	Bearing puller
Carburetor	Engine block



REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

MACHINERY GO AROUND THE BOARD

OBJECTIVE: To provide practice with sight vocabulary and further develop word recognition skills.

MATERIALS: A rectangular piece of heavy paper, about one-foot square, with a 2-inch margin. The margin is divided into spaces in which words for practice are written; some of the spaces may be used for penalties or rewards. A spinner for determining the number of spaces to be moved; a colored marker for each player.

DIRECTIONS: Each player, in turn, spins the arrow and moves clockwise the number of spaces indicated, starting with "Home Base". S/he reads the word that s/he "lands on". If s/he doesn't know the word, s/he returns to the original space until his/her next turn. The pupil first going all the way around to "Home Base" wins. (Phrases or sentences may also be used).

MOVE AHEAD 3	piston	compressor	shaft		reamer
ring					MOVE AHEAD 3
coolant					rod
ratchet					insert
HOME BASE	lubricant	pinion	bearing	MOVE BACK 2	hone

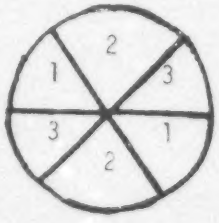
WORD PARCHEESI - SMALL ENGINES

OBJECTIVE: To provide practice in vocabulary building.

MATERIALS: Posterboard, chips

DIRECTIONS: Take a large piece of stiff rectangular paper and make a two inch margin around the edge. Divide that margin into spaces and in each space write a word, initial sound, or blend. Corner spaces can be used for penalties or rewards. Example: Go back four spaces, go forward two spaces, etc.

Go Forward 2 Spaces	Wheel Puller	Spark Plug	Torque Wrench	Bearing Puller	Go Back 2 Spaces
Valve Lapping Tools	Make a disk with numbers and an arrow. The student spins the arrow and moves the number of spaces indicated. S/he must read each word or sound as s/he moves to each space. S/he must read and define all the words. If s/he cannot, s/he must go back to the previous move. The first student to go around the board wins the game.				Ring Compressor
Go Back 1 Space					Compression Gauge
Flywheel Fixture					Operating Manual
Ring Groove Cleaner					Go Back 1 Space
Ring Remover Tool					Seal Press
Repair Manual					Bearing Puller
Go Back 2 Spaces	Socket Wrench	Flywheel Puller	Screwdriver	Spark Plug Wrench	S T A R T



REFERENCE: TECHNIQUES for Teachers of Adults. Vol. XV, No. 4, January, 1975.

MATCHING WORDS AND CONCEPTS

OBJECTIVE: To provide practice in relating specific words to general categories.

MATERIALS: Cards (words) and boxes (for general areas).

DIRECTIONS: Issue ten cards to each player. The teacher or leader should call out words. The first player to place all the cards in the correct boxes wins.

Words for Cards	General Categories
needle valve	Carburation
piston	
spark plug	Electrical System
intake valve	
diafram	Mechanical Components
valve spring	
rod	
piston pin	
electrode	
oil slinger	
camshaft	
crankshaft	
bearing	
condenser	
points	
head	
muffler	

GO AROUND THE BOARD - SOLDERING

OBJECTIVE: To provide practice with sight vocabulary and further develop word-recognition skills.

MATERIALS: A rectangular piece of heavy paper, about one-foot square, with a 2 inch margin. The margin is divided into spaces in which words for practice are written; some of the spaces may be used for penalties or reward. A spinner for determining the number of spaces to be moved; a colored marker for each player.

DIRECTIONS: Each player, in turn, spins the arrow and moves clockwise the number of spaces indicated, starting with "Home Base". S/he reads the word that s/he "lands on". If s/he doesn't know the word, s/he returns to the original space until his/her next turn. The student first going all the way around to "Home Base" wins. (Phrases or sentences may also be used.)

<table>
<tr><td>Move Ahead 3</td><td colspan="2">Flux</td><td>Move Back 3</td><td colspan="2">Tinned</td><td>Torch</td></tr>
<tr><td>Solder</td><td colspan="5" rowspan="3"></td><td>Soldering Iron</td></tr>
<tr><td>Lead</td><td>Move Ahead 3</td></tr>
<tr><td>Sweat</td><td>Wire Brush</td></tr>
<tr><td>HOME BASE</td><td>Silver</td><td>Flame</td><td>Move Back 2</td><td>Goggles</td><td>Alloy</td></tr>
</table>

REFERENCE: Wagner, Guy and Hosier, Max. Reading Games. New York. Macmillan Publishing Co., Inc., 1970.

WORD SEARCH PUZZLE - OXY-ACETYLENE WELDING

OBJECTIVE: To provide practice in Word Recognition, Vocabulary, and Spelling Reinforcement.

MATERIALS: A duplicated sheet with the word search puzzle for each student.

DIRECTIONS: The puzzle on the next page can be used in several ways to teach the above skills. The words can be given orally, one-by-one, training the student to visualize the word and find it. The definitions might be given either orally or in writing to review vocabulary and spelling of the hidden words. In individual situations where particular students have few, if any, reading skills, the list of words might be given to help these students in word recognition and a brief definition.

OXY-ACETYLENE WELDING

acetylene	hose	orifice
regulator	oxygen	gauge
spark lighter	welding	pressure
cylinder	torch	flame
goggles		

1. Is hot _____
2. Measures the pressure _____
3. A small hole _____
4. Is made of rubber _____
5. Is in the green cylinder _____
6. Reduces pressure _____
7. Used to light the flame _____
8. Must be kept upright _____ cylinder
9. To protect the eyes _____
10. Mixes the gasses _____
11. Is routinely tested for safety _____
12. Quick way of joining metal _____
13. Must be set to suit the welding needs _____

REFERENCE: Union Carbide Corp., Linde Division, The Oxy-Acetylene Handbook, New York, 1972, Second Edition.

See Activity Key on page IK-10

PUZZLE - OXY-ACETYLENE WELDING

O L W E R A Q S E T G D O H M P

A S P A R K L I G H T E R I O R

B F R I P L N K D S A W E T I E

D J E O G N I D L E W Y O U C S

R O G N J I F L P O D A T I C S

S E U S O R I F I C E R O D E U

N V L U F X P I H K G Y R I B R

E T A C E T Y L E N E D C U G E

J O T L H I U G F D S I H O U P

B A O I T Y F S E F O W K L E A

F F R J O F N C A N H L A E R X

S L L N C T E D P Z M W S G J O

R I A B C Y L I N D E R I U P M

S T W M H U G O F N L S F A D R

H A C L E O Y T D S E L G G O G

See Activity Key on page IK-10

WELDING PARCHEESI

OBJECTIVE: To provide practice in vocabulary building

MATERIALS: Posterboard, chips

DIRECTIONS: Take a large piece of stiff rectangular paper and make a two-inch margin around the edge. Divide that margin into spaces and in each space write a word, initial sound, or blend. Corner spaces can be used for penalties or rewards. Example: Move back four spaces, take another turn, etc.

Go Forward 2 Spaces	puddle	fusion	bronze	steel	Go Back 2 Spaces
welder					clamp
acetylene					flame
oxygen					tig
pick					mig
flux					root
electrodes					filet
Go Back 2 Spaces	striker	hood	leads	ampere	S T A R T

Make a disk with numbers and an arrow.

The student spins the arrow and moves the number of spaces indicated. S/he must read each word or sound as s/he moves to each space. S/he must read and define all the words. If s/he cannot, s/he must go back to the previous move. The first student to go around the board wins.

WORD JUMBLE PUZZLE - WELDING

OBJECTIVE: To provide practice in vocabulary building and spelling.

MATERIALS: A duplicated sheet with the word jumble for each student.

DIRECTIONS: Unscramble the letters and find words having to do with arc welding.

1. G L E O G S G
2. D E E R O L E C T
3. E T R E N P T E A
4. R I A V E T C L
5. O S T O N P I I
6. A E R E P M H O T S
7. M U R I E I S P T I
8. T S R A G I T H
9. I S L T E A U N
10. N N E A A L
11. O S D I L I F I S E
12. F N O R N R O S U E
13. X I O Z I E D
14. T L U A R I O V T L E

See Activity Key on page IK-10

CLOZE INVENTORY - BRAZING

OBJECTIVE: To assess level of difficulty.

MATERIALS: Duplicated copy for each student.

DIRECTIONS: Give each student one copy of the test and answer sheet and allow ample time to complete it.

Select a sample passage from your text. Write the first sentence as it appears in the text. Write the following sentences leaving every fifth word blank until you have fifty blanks. Write the last sentence without any blanks. Prepare an answer sheet with fifty numbers and space for the answer. A sample is on the following page with twenty-one blanks.

The students should read the entire passage before writing on the answer sheet. In scoring the answer sheet, count as correct the words which are exactly correct. Substitution, even though they make sense, are incorrect. (Depending on the level of students, you may accept slightly misspelled words.)

To determine the reading level with a 50 blank passage, use the following table:

23 and above correct	-- independent reading level
19 - 22 correct	-- instructional reading level
below 19	-- frustration reading level

To determine the reading level of the sample on the following page, use the following table:

10 and above correct	-- independent reading level
8 - 9 correct	-- instructional reading level
below 8	-- frustration reading level

CLOZE INVENTORY - BRAZING

Brazing is a group of welding processes. The metals are joined _____ (1) heating to suitable temperatures _____ (2) 1000°F. and by using _____ (3) nonferrous filler metal having _____ (4) melting point below that _____ (5) the base metals. The _____ (6) metal is distributed between _____ (7) closely fitted surfaces of _____ (8) joint by capillary action.

_____ (9) commercial metals can be _____ (10). Although a brazed joint _____ (11) a relatively high tensile _____ (12), it is not recommended _____ (13) the full strength of _____ (14) joint is required.

An _____ (15) factor in brazing is _____ (16) there is less danger _____ (17) destroying the mechanical properties _____ (18) the base metal since _____ (19) bonding temperatures are used _____ (20) normally required for fusion _____ (21).

Brazing can also be used to join dissimilar metals.

REFERENCE: Deere and Company, Fundamentals of Service, Welding, (Moline, Ill., 1971-1974), Second Edition. P.P. 48.

See Activity Key on page IK-11

CLOZE INVENTORY - SOLDERING

OBJECTIVE: To assess level of difficulty.

MATERIALS: Duplicated copy for each student.

DIRECTIONS: Give each student one copy of the test and answer sheet, and allow ample time to complete it.

Select a sample passage from your text. Write the first sentence as it appears in the text. Write the following sentences leaving every fifth word blank until you have fifty blanks. Write the last sentence without any blanks. Prepare an answer sheet with fifty numbers and spaces for the answers. A sample is on the following page with twenty-nine blanks.

The students should read the entire passage before writing on the answer sheet. In scoring the answer sheet, count as correct the words which are exactly correct. Substitutions, even though they make sense, are incorrect. (Depending on the level of students, you may accept slightly misspelled words.)

To determine the reading level with a fifty blank passage, use the following table:

23 and above correct	-- independent reading level
19 - 22 correct	-- instructional reading level
below 19 correct	-- frustration reading level

To determine the reading level of the sample on the following page, use the following table:

14 and above correct	-- independent reading level
11 - 13 correct	-- instructional reading level
below 11 correct	-- frustration reading level

CLOZE INVENTORY - SOLDERING

Most soft solders are alloys of tin and lead. The percentage of each _____(1) determines its melting point _____(2) other characteristics. The melting _____(3) is from about 370° F. _____(4) a mixture of 70 _____(5) tin and 30 percent _____(6) to about 590° F. for _____(7) percent tin and 95 _____(8) lead.

The most common _____(9) -purpose solder is known _____(10) half-and-half or _____(11) solder. It contains 50 _____(12) tin and 50 percent _____(13) and melts at about _____(14).

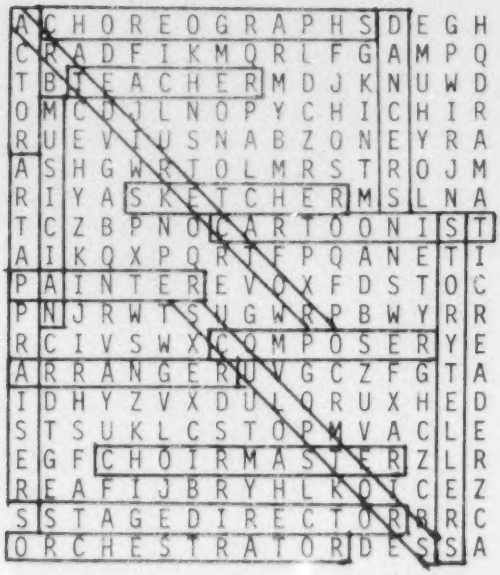
In general, alloys with _____(15) low-tin content have _____(16) melting points and do _____(17) flow as readily as _____(18) high-tin alloys. The _____(19) -tin alloys are less _____(20) and are used where _____(21) volumes of soldering are _____(22). Solders with a high _____(23) of tin have better _____(24) properties and produce less _____(25). High-tin solders are _____(26) considerably in electrical work.

_____(27) with a tin content _____(28) 60 percent or more _____(29) classified as fine solders. Fine solders are used in soldering instruments where temperatures are critical.

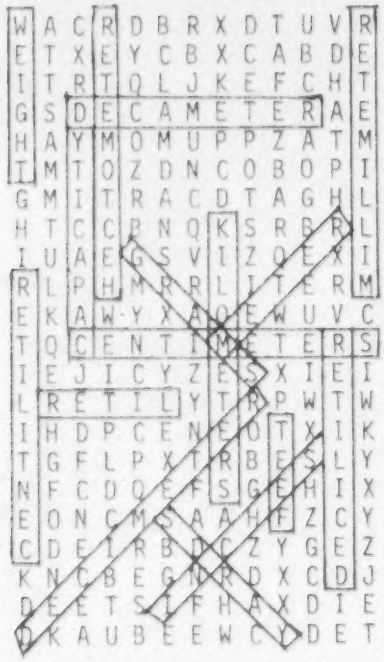
REFERENCE: Walker, John R., Modern Metal-Working, Goodheart-Wilcox, Illinois, 1973, Unit 29.
Jefferson, T. B., and Woods, Gorham., Metals and How to Weld Them, James F. Lincoln Arc Welding Foundation, Cleveland, 1967, Second Edition.

See Activity Key on page IK-11

WORD SEARCH PUZZLE KEY I-1


A C H O R E O G R A P H S D E G H
C R A D F I K M Q R L F G A M P Q
T B T E A C H E R M D J K N U W D
O M C D J L N O P Y C H I C H I R
R U E V I U S N A B Z O N E Y R A
A S H G W R T O L M R S T R O J M
R I Y A S K E T C H E R M S L N A
T C Z B P N O C A R T O O N I S T
A I K Q X P Q R J F P Q A N E T I
P A I N T E R E V O X F D S T O C
P N J R W T S U G W R P B W Y R R
R C I V S W X C O M P O S E R Y E
A R R A N G E R U V G C Z F G T A
I D H Y Z V X D U L Q R U X H E D
S T S U K L C S T O P M V A C L E
E G F C H O I R M A S T E R Z L R
R E A F I J B R Y H L K O I C E Z
S S T A G E D I R E C T O R B R C
O R C H E S T R A T O R D E S S A

MEASUREMENT TERMS WORD SEARCH PUZZLE KEY I-4


W A C R D B R X D T U V R
E T X E Y C B X C A B D E
I T R T Q L J K E F C H T
G S D E C A M E T E R A E
H A Y M O M U P P Z A T M
I M T O Z D N C O B O P I
G M I T R A C D T A G H L
H T C C R N Q K S R B R L
I U A E G S V I Z O E X I
R L P H M R R L I T E R M
E K A W Y X A O E W U V C
T Q C E N T I M E T E R S
I E J I C Y Z E S X I E I
L R E T I L Y T R P W T W
I H D P C E N E O T X I K
T G F L P X T R B E S L Y
N F C D Q E F S G E H I X
E O N C M S A A H F Z C Y
C D E I R B D C Z Y G E Z
K N C B E G N R D X C D J
D E E T S I F H A X D I E
D K A U B E E W C Y D E T

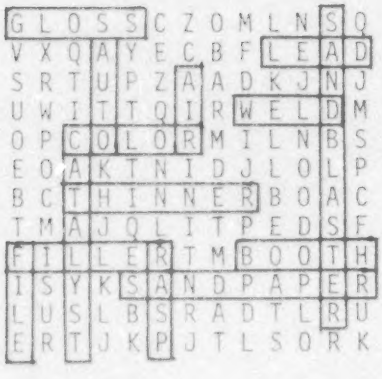
TOOLS MATCH GAME KEY I-7

1. 3 screwdriver
2. 5 trowel
3. 1 tin snips
4. 2 hacksaw
5. 4 chuck key

MATCH GAME - SAFETY KEY I-8

1. B
2. J
3. G
4. H
5. I
6. E.
7. D
8. F
9. C
10. A

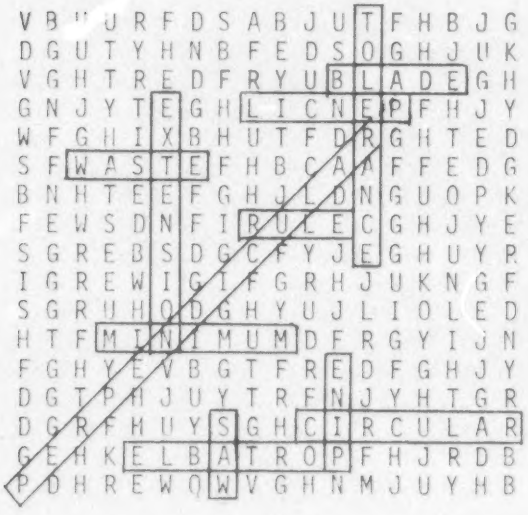
WORD SEARCH PUZZLE KEY I-10


G L O S S C Z O M L N S Q
V X Q A Y E C B F L E A D
S R T U P Z A A D K J N J
U W I T T Q I R W E L D M
O P C O L O R M I L N B S
E O A K T N I D J L O L P
B C T H I N N E R B O A C
T M A J Q L I T P E D S F
F I L L E R T M B O O T H
I S Y K S A N D P A P E R
L U S L B S R A D T L R U
E R T J K P J T L S O R K

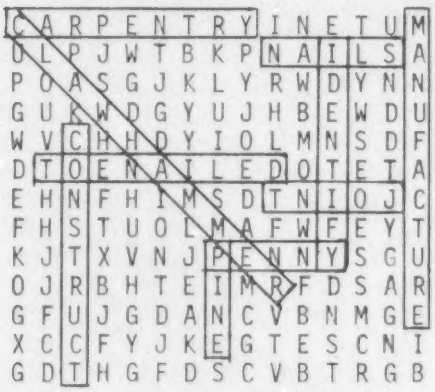
AUTO MECHANICS BASEBALL KEY I-13

1. feeler gauge
2. flow test
3. hub
4. piston
5. pitch
6. ring gear
7. wrist pin
8. vacuum

CIRCULAR SAW WORD SEARCH PUZZLE KEY I-14


V B U J R F D S A B J U T F H B J G
D G U T Y H N B F E D S O G H J U K
V G H T R E D F R Y U B L A D E G H
G N J Y T E G H L I C N E P F H J Y
W F G H I X B H U T F D R G H T E D
S F W A S T E F H B C A P F F E D G
B N H T E E F G H J L D N G U O P K
F E W S D N F I R U L E C G H J Y E
S G R E B S D G C F Y J E G H U Y R
I G R E W I G I F G R H J U K N G F
S G R U H O D G H Y U J L I O L E D
H T F M I N I M U M D F R G Y I J N
F G H Y E V B G T F R E D F G H J Y
D G T P H J U Y T R F N J Y H T G R
D G R F H U Y S G H C I R C U L A R
G E H K E L B A T R O P F H J R D B
P D H R E W O W V G H N M J U Y H B

TOENAILING WORD SEARCH PUZZLE KEY I-16


C A R P E N T R Y I N E T U M
O L P J W T B K P N A I L S A
P O A S G J K L Y R W D Y N N
G U K W D G Y U J H B E W D U
W V C H H D Y I O L M N S D F
D T O E N A I L E D O T E I A
E H N F H I M S D T N I O J C
F H S T U O L M A F W F E Y T
K J T X V N J P E N N Y S G U
O J R B H T E I M R F D S A R
G F U J G D A N C V B N M G E
X C C F Y J K E G T E S C N I
G D T H G F D S C V B T R G B

CARPENTRY BASEBALL KEY I-21

1. dry wall
2. collar beam
3. cap
4. casing
5. column
6. frame
7. cornice
8. dado

HAND TOOL IDENTIFICATION I KEY I-22

1. hand saw
2. C-clamp
3. scissors
4. putty knife
5. divider
6. soldering iron - electric
7. soldering iron - non-electric
8. tin snips or metal shears
9. screwdriver - straight
10. screwdriver - Phillips

HAND TOOL IDENTIFICATION II KEY I-23

1. framing square
2. nail set
3. coping saw
4. auger bit
5. wood chisel
6. scribe
7. combination square
8. nail bar
9. countersink
10. bevel square
11. bench plane - jack
12. block plane
13. folding rule
14. bench plane - jointer
15. push drill
16. expansion bit
17. brace
18. bench plane - smoothing
19. drill - bit
20. try-square
21. drill - rotary

HARDWARE IDENTIFICATION KEY I-24

1. hinge - butt
2. hinge - tee
3. hinge - strap
4. hinge - leaf - loose pin butt
5. hinge - pin - loose pin butt
6. hinge - leaf - loose pin butt
7. hasp and staple
8. barrel bolt
9. baseboard door stop
10. window lift
11. sash lock
12. recessed window lift
13. metal brace - flat L bracket
14. metal brace - flat T bracket - repair brackets
15. metal brace - bent L bracket - repair brackets
16. corrugated fastener
17. screw hook
18. L hook
19. screw eye
20. cabinet catch
21. hook and eye

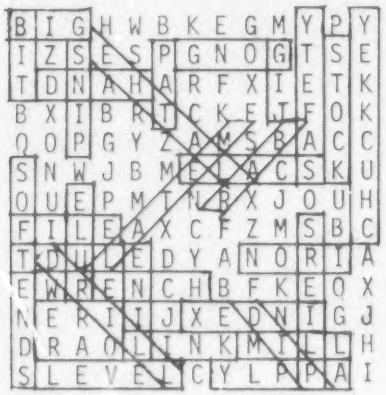
WOODWORK IDENTIFICATION KEY I-25

1. sawhorse
2. paint brush
3. counter brush - fox tail brush
4. glass cutter
5. half round file
6. triangular file
7. round file
8. oil can - pump oiler
9. oil can
10. set of wood lathe chisels
11. lathe tool
12. lathe tool - gouge, large
13. lathe tool - parting
14. lathe tool - gouge, small

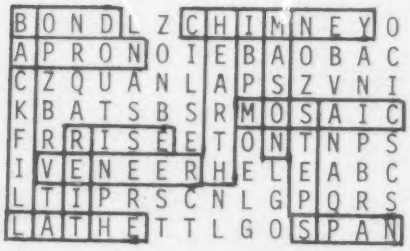
ELECTRICITY BASEBALL KEY I-30

1. ammeter
2. ampacity
3. armored cable
4. battery
5. branch circuit
6. bus bar
7. BX
8. candlepower

MACHINE SHOP WORD SEARCH PUZZLE KEY I-31


B I G H W B K E G M Y P Y
I Z S E S P G N O G T S E
T D N A H A R F X I E T K
B X I B R T C K E T F O K
O O P G Y Z A M S B A C C
S N W J B M E L A C S K U
O U E P M T N B X J O U H
F I L E A X C F Z M S B C
T D U L E D Y A N O R I A
E W R E N C H B F K E O X
N E R I I J X E D N I G J
D R A O L I N K M I L L H
S L E V E L C Y L P P A I

WORD SEARCH PUZZLE KEY I-33


B O N D L Z C H I M N E Y O
A P R O N O I E B A O B A C
C Z Q U A N L A P S Z V N I
K B A T S B S R M O S A I C
F R R I S E E T O N T N P S
I V E N E E R H E L E A B C
L T I P R S C N L G P Q R S
L A T H E T T L G O S P A N

BASEBALL KEY I-35

1. cement
2. common brick
3. cheekwall
4. concrete
5. course
6. face
7. flashing
8. tier

PLUMBING KEY I-36

1. nipple - short pipe threaded
2. nut - used as a fastener
3. flange - used as a fastener
4. plug - used as a male plug
5. cross-tee - 4-way connector
6. cap - female stop
7. bell reducer - to connect 2 different size pipes
8. coupler - to connect 2 same size pipes
9. 90° elbow - to make 90° change in direction
10. 30° elbow - to make 30° change in direction
11. nipple - short pipe threaded
12. recessed reducer - used to reduce pipe
13. trap - used under bathtub to prevent odors
14. 90° St. ell - to make swing joint 90°
15. 30° St. ell - to make swing joint 30°
16. tee - to connect 3 pipes at 90°
17. y - to connect 3 pipes at less than 90°
18. union - connecting two lines
19. plug reducer - pipe reducer used where permissible
20. tubing tee - connecting tubing at 90°
21. pipe hanger - to hang pipes to structure

PARTS OF THE REFRIGERATOR - KEY I-39

1. Drive belt
2. Sight glass
3. Filter-dryer
4. Thermometer
5. Condenser
6. Fan
7. Thermostat
8. Compressor
9. Evaporator
10. Regulating valve

PUZZLE - PARTS OF THE REFRIGERATOR - KEY I-39

FANTFTHERMOSTATOPHQ
RHDRIVEBELTRSBHQPBP
EPCMLRBCRNOFYBEZYTB
GZTXTSVUPQMPCTRRPWC
UDPQEVAPORATORMMFXF
LLRTRSWSOWVUMZOZGJT
AUIODRTGPILWPTMXYQX
TRXYRZWBNWLCRTEKTFR
IYUDYTRWQXMDEPTRMWP
NMDSEQTMVAIZSREYCGT
GWOPRWXCFDTHSPRQWYB
VPIBNREDHPZXOUENMGH
AUHTCONDENSERKKYTHB
LRTYCPTGBPSQDTWPWYJ
VSIGHTGLASSTSURHPPL
EYUHGZXYPDGTEQPGTZX

BINGO CARD - SHEET METAL KEY I-41

1. Sheet metal
2. Cylinder
3. Gloves
4. Stakes
5. Crimp
6. Rivet
7. Mallet
8. Hack saw
9. Power shears
10. Scriber
11. Bench plate
12. Wire edge
13. Lap seam
14. File
15. Bead
16. Solid punch
17. Pattern
18. Self-tapping screw
19. Notcher
20. Bar folder
21. Squaring shears
22. Hand groover
23. Framing square
24. Cone

CROSSWORD PUZZLE - METAL FABRICATION - KEY I-42

1. snips
2. gloves
3. cylinder
4. rivet
5. setting
6. torch
7. screw
8. lap
9. framing
10. solder

NAMING SHEET METAL JOINTS AND BENDINGS KEY I-43

1. Lap seam
2. Countersunk lap seam
3. Outside lap seam
4. Standing seam
5. Flat lock seam
6. Grooved flat lock seam
7. Lap bottom seam
8. Insert bottom seam
9. Single bottom seam
10. Crimp
11. Bead
12. Wired edge
13. Double hem
14. Single hem
15. Cone
16. Pyramid
17. Cylinder
18. Prism

METAL CUTTING CROSSWORD PUZZLE KEY I-44

ACROSS

1. hacksaw
2. rule
3. wing nut
4. frame
5. adjust
6. gap
7. position
8. try square

DOWN

1. horizontal
3. waste
9. vise
10. clamp
11. tighten
12. blade
13. metal stalk

OXY-ACETYLENE WELDING - KEY I-50

1. flame
2. gauge
3. orifice
4. hose
5. oxygen
6. regulator
7. spark lighter
8. acetylene
9. goggles
10. torch
11. cylinder
12. welding
13. pressure

PUZZLE - OXY-ACETYLENE WELDING - KEY I-50

WORD JUMBLE PUZZLE - WELDING KEY I-52

1. goggles
2. electrode
3. penetrate
4. vertical
5. position
6. atmosphere
7. impurities
8. straight
9. insulate
10. anneal
11. solidifies
12. nonferrous
13. oxidize
14. ultraviolet

CLOZE INVENTORY - BRAZING KEY I-53

1. by
2. above
3. a
4. a
5. of
6. filler
7. the
8. the
9. Most
10. brazed
11. has
12. strength
13. when
14. a
15. important
16. that
17. of
18. of
19. lower
20. than
21. welding

CLOZE INVENTORY - SOLDERING KEY I-54

1. metal
2. and
3. range
4. for
5. percent
6. lead
7. 5
8. percent
9. general
10. as
11. 50-50
12. percent
13. lead
14. 471°F.
15. a
16. higher
17. not
18. the
19. low
20. expensive
21. large
22. done
23. amount
24. wetting
25. cracking
26. used
27. Solders
28. of
29. are